Technical Report

nº 07/SBQ v. 0

General Guidelines:

Procedures for Biofuels Importers Certification (*)

(*) This technical report only applies to the first-generation corn-produced ethanol fuel route imported from the United States.

TECHNICAL REPORT nº 07/SBQ v. 0

General Guidelines: Procedures for Biofuels Importers Certification

SUPERINTENDENCE OF BIOFUELS AND PRODUCT QUALITY

Superintendent
Carlos Orlando Enrique da Silva

Deputy Superintendent
Danielle Machado e Silva Conde

COORDENAÇÃO DE GESTÃO DO RENOVABIO

Coordinator
Luiz Fernando de Souza Coelho

Substitute Coordinator
Maria Auxiliadora de Arruda Nobre

Equipe Técnica Technical Team
Airton Shoiti Akizawa
Eduardo Aboim Sande
Fabio Nuno Marques da Vinha
Gustavo Moreira Menezes
Joana Borges da Rosa
Jose Carlos Aravechia Junior
Marcelo da Silveira Carvalho
Rafaela Coelho Guerrante Gomes Siqueira Moreira
Sissa Lorrayne da Silva Pereira

Versions	Changed items	Date	Approved by
0	-	23/12/2022	Carlos Orlando Silva

1. GOAL

Provide guidance to US biofuels importers who wish to obtain certification under the RenovaBio, and establish minimum requirements to be followed by ANP accredited inspection firms in RenovaBio in the certification processes of these agents.

This technical report applies to the route of first-generation ethanol fuel imported from the United States produced from corn.

2. REFERENCE DOCUMENTS

- Law No. 13.576, December 26, 2017
- Decree No. 9.888, June 27, 2019
- Decree No. 9.964, August 24, 2019
- ANP Resolution No. 758, November 23, 2018
- Technical Report No. 02/SBQ

3. DEFINITIONS

All the definitions set out in ANP Resolution no. 758/2018 are applicable. Additionally, for the purposes of this Report, it is necessary to define the following:

a) Eligible biomass producer: is the agent responsible for the production of biomass in rural property where there has been no suppression of native vegetation from the date of entry into force of ANP Resolution 758, 2018, and that meets the provisions of art. 27 of the aforementioned act.

We emphasize that according to Article 3 of the ANP Resolution No. 758/2018, Paragraph XIII, the following definition of rural property is valid:

> *"XIII – rural property: when located in the national territory, it refers to the area contained in registered perimeter and identified in the Rural Environment Registry (CAR), in compliance with the Law No. 12.651 of May 25, 2012;* ***when located in foreign territory, it is referred to the perimeter recognized by an official body of the country and georeferenced."***

In the case of the United States, when it is indispensable, the farm areas declared on the form "**FSA-156EZ"** can be considered as if presented by the rural owner.

4. STEPS OF THE BIOFUELS IMPORTERS CERTIFICATION

The biofuels importer must open an individual certification procedure for each production unit (plant) from which he intends to import biofuels.

The importer may have more than one Certificate of Efficient Biofuel Production, each Certificate being linked to a single producing unit from which he imports biofuels.

The Biofuel Certification process consists of several steps. Each step shall follow the sequence of procedures, according to the requirements defined in this technical report. Where relevant, the articles of ANP Resolution no 758/2018 corresponding to the items are indicated.

Guidance on procedures for submitting documentation for ANP approval of the Biofuels Certification process is described in Technical Report 04/SBQ.

It is important to note that:

- all input data of RenovaCalc (fields to be filled in) must be completed by the biofuel producing unit or the importer of biofuels and audited by the inspecting firm;

- all documentation audited by the inspecting firm must be archived in physical, magnetic, optical or electronic media for a minimum period of 5 years;

- the importer of biofuels is responsible for the annual monitoring of the Energy-Environmental Efficiency Score (NEEA) and the fraction of the eligible biofuel volume contained in the Certificate of Efficient Biofuel Production or Import.

4.1 Biofuels Importers Certification Contract

Prior to the start of the verification process of the information required for calculation of the NEEA and eligible biofuel volume fraction, the inspecting firm and the biofuel importer shall sign a contract that contains at least the following:

i. corporate name, National Register of Legal Entities, and full address of the inspecting firm.
ii. corporate name, National Register of Legal Entities, and full address of the biofuel importer.
iii. identification of the legal responsible of the inspecting firm.
iv. identification of the legal responsible of the biofuel importer.
v. identification of the production unit, full address, product, and route to be certified.
vi. date of signature of the contract and term.
vii. duties and obligations of the importer and inspecting firm.

According to Article 15 of the ANP Resolution No. 758/2018, a natural person or legal entity that has provided advice related to the implementation of the Biofuel Certification process or that has been part of the workforce, member of corporate board or acted as advisor for the companies involved in the certification process, during the two years preceding the start of work.

The inspecting firm must verify whether the importer is regular towards ANP to import biofuel, under the ANP Resolution No. 777, of 2019, and its regularity in the National Registry of the Legal Entities of the Federal Revenue (CNPJ).

4.2 **On-site loco audit** (referred to in art. 30 and 31 of ANP Resolution 758/2018)

In any Certification of the Efficient Production or Import of Biofuels an inspection of the unit producing biofuels must be carried out. It is indispensable to have the presence of, among other employees of the unit, the industrial manager, the supply manager, those responsible for managing the computerized inventory, consumption, and production control systems, by providing the data and filling in RenovaCalc, as well as representative(s) of the importer of biofuels. If employees are posted to another unit, the inspecting firm may choose not to move everyone to the producing unit and perform additional auditing at the other unit.

After on-site audit at the biofuel production unit, the inspecting firm shall generate an audit report in a single document, listing all information and documents collected, as well as the daily attendance list with the full name and signature of the participants.

The inspecting firm may take photos for better foundation of the analysis and conclusion.

4.3 **Public Consultation** (referred to in art. 30 and 31 of ANP Resolution 758/2018)

The inspecting firm must conduct a public consultation for a minimum of thirty days, with the following documents available in Portuguese and English:

a) data filled in "RenovaCalc" and validated by the inspecting firm;
b) proposal for a Certificate of Efficient Biofuel Production or Import with express indication of the Energy-Environmental Efficiency Score (NEEA) and the fraction of the volume of eligible biofuel, according to the model available on the ANP website; and
c) partial report on the certification process which shall contain the information indicated in item 4.10.

At least five working days before the start date of public consultation on the Certificate of Efficient Biofuel Production or Import, the inspecting firm must send to ANP a Public Consultation Notice, as an available template on ANP website. In this document, it should be included the name of the importer of biofuel, the identification of the linked biofuel production unit, the product to be certified and the route, the period of public consultation, the electronic site for access to information on public consultation and procedures for manifestation. **The public consultation may only be initiated after express approval of ANP.** The deadlines for such communication and the procedure of sending are described in the Technical Report no 04.

It should be noted that detailed information on the agricultural part concerning biomass producers is not included in the list of mandatory documents to be made available in public consultation. However, such data must be validated by the inspecting firm and forwarded for approval by ANP. Thus, the complete file containing all information should be sent to ANP together with the Public Consultation Notice. When the inspecting firm does not make the complete file available in the public consultation, the file that will be made available must also be forwarded.

Some information considered critical and sensitive under competitive aspects present in RenovaCalc may be classified as long as a request is sent containing the justification for the classification of the information and their classification. The request will be analyzed by ANP, which will issue an opinion about the possibility of labeling the data in the public consultation.

If new versions of the Technical Reports and RenovaCalc are published on the ANP website, the previous versions may be used in certification processes whose public consultations begin within 90 days from the date of publication of the new versions.

ANP may, exceptionally, request that the inspecting firms use the most up-to-date versions published on its website.

ANP will make available on its website information regarding the public consultation to give wide publicity of the certification process.

After the public consultation, the inspecting firm shall generate a report containing all suggestions and comments submitted, as well as justifications for incorporation and refusal and if they have generated investigations and subsequent audits for their evaluation.

Changes in values informed in RenovaCalc and in the Certificates Proposals, made available for public consultation, will only be admitted if they are motivated by suggestions or comments within the latter.

The documents made available for public consultation, its report, and the Final Report of the Biofuel Certification Process shall remain available on the same website of the public consultation by the validity period of the Certificate of Efficient Biofuel Production or Import. Changes in the website, regarding the availability of public consultation information, should be communicated to ANP, who will widely disclose it.

In case of changes not motivated by suggestion or comment presented in the public consultation, it will be mandatory to conduct a new public consultation.

4.4 **Verification of compliance with the electability criteria** (referred to in art. 23 to 27 of ANP Resolution 758/2018)

The biomass produced outside the national territory may not be derived from an area where there has been suppression of native vegetation. The verification by the primary issuer shall take place in the form of item 4.4.1.

In addition, art. 27 of ANP Resolution 758/2018 provides that for biomass produced outside the national territory it must be proven that the biomass producer complies with the environmental legislation in force in the country of origin.

Considering the lack of a document issued by US government agency for this purpose, American corn producers must submit a declaration that meets the current environmental legislation of their country.

4.4.1 *Suppression of native vegetation (eligibility criterion referred to in art. 24 of the ANP Resolution n° 758/2018)*

Information regarding the agricultural phase of biomass production should only be provided if the energy biomass comes from a production area where there has been no suppression of native vegetation from the date of entry into force of ANP Resolution 758/2018 (November 27, 2018).[1]

To meet this criterion, there may not have been suppression of native vegetation in the area dedicated to corn production of rural properties participating in the certification process. This criterion does not apply to areas devoted to other purposes than corn production.

For compliance verification with the above-mentioned requirement, an isolated tree specimen is not considered as a suppression of native vegetation under specific legislation.

The verification of compliance with such criterion should be carried out through the analysis of satellite images with a spatial resolution better than or equal to thirty meters. For this purpose, it is recommended to use images from the freely distributed Landsat-8 or Sentinel-2 satellite.

Images taken after the end of the base period considered in the analysis should be compared with images taken before 27 November 2018. It should also be analyzed images that compare the period before December 24, 2017 to the period after November 27, 2018. If, in this period is identified suppression of native vegetation, the inspecting firm should verify that the suppression observed the current environmental standards. It is also possible to carry out only a comparative analysis that covers the period prior to 24 December 2017 until the date after the end of the base period considered in the analysis, and is not mandatory, in cases where there has been no suppression of native vegetation the submission of separate documents.

The professional who analyzes satellite images should have skill in image processing techniques with experience in image interpretation, consolidation, and presentation of the information.

The importer must hire a professional or specialized company to verify the criterion. This professional may also be part of the staff of the biofuel producer or be hired by it. The qualified professional must issue a statement of technical competence and an analysis report on the images.

The inspecting firm may hire a professional or specialized company for the audit to verify the criterion. The professional hired by the inspecting firm to verify the eligibility criteria in no case may be the same as the person responsible for the analysis and declaration of images by the unit producing biofuels. In this case, an analysis report must also be issued by a professional who declares technical competence. The award and declaration shall be filed together with the other documents of the certification process.

To ensure the traceability of images used for the purposes of proving and verifying this requirement, it is necessary to record the following information: name of satellite and sensor, date, orbit-point and the mean quadratic positional error (RMS) value of the image.

[1] It is important to emphasize that when, at least, one rural property of the biomass producer is eligible, the production profile information of all properties of that producer must be conveyed (not only the eligible property).

The mean quadratic positional error (RMS) of the images should not exceed 0.5 pixels, that is, fifteen meters and processing level of type "L1TP" if Landsat-8 images are used, and ten meters, if Sentinel-2 images are used.

The analysis of images can be performed in aggregated areas (such as county, municipalities or neighborhoods) if it is possible to identify the origin of corn coming from these regions, not being necessary to perform by rural property. Being noted that in the aggregate area there was suppression of native vegetation, it must be individually proven that the rural property is not located in the area of suppression for it to be considered eligible.

4.4.2 Declaration of eligibility information in RenovaCalc

It is not necessary to fill in the “Eligibility Information” sheet of the RenovaCalc v.7 file.

4.5 Calculation of the eligible biofuel volume fraction

The inspecting firm shall audit the declared records, as well as the calculation of the fraction of the eligible biofuel volume.

The eligible volume fraction is not calculated directly in RenovaCalc, but must be calculated and documented by the biofuel producer or importer and audited by the inspecting firm.

The calculation memory of the fraction of the eligible biofuel volume should be included in the documents of the audit process, covering all assumptions adopted.

The fraction of the eligible biofuel volume shall be equal to the eligible biomass energy fraction used. For example, in a production unit where only 70% of the processed corn is eligible, then 70% of the volume of ethanol produced will be able to generate CBIOs.

That is, for the E1GMI route it is necessary to seek information about the amount of eligible biomass acquired and the amount of corn processed (Figure 2 - RenovaCalc, industrial phase). Thus, the fraction of the eligible biofuel volume would be calculated by formula (2).

Industrial Phase – ethanol processing				
Processing and yields				
Quantity of processed corn		1 corn/year	Unit	
Transport distance – corn		km		
Yield – anhydrous ethanol		L/1 corn		
Yield – hydrated ethanol		L/1 corn		
Yield – commercialized electric energy		kWh/1 corn		
Yield – Distillers Dried Grains		Kg/1 corn	Unit	
Yield – Distillers Dried Grains with Soluble		Kg/1 corn	Unit	
Yield – Corn Gluten Meal		Kg/1 corn	Unit	
Yield – Corn Gluten Feed		Kg/1 corn	Unit	
Yield – Corn Oil		Kg/1 corn		
Fuels and electricity				

Figure 2 – RenovaCalc Information

$$Fraction\ of\ eligible\ volume\ = \frac{Q_{eligible}}{Q_{total}} \quad (2)$$

Where: $Q_{eligible}$ is the quantity of eligible biomass processed by the production unit, and Q_{total} is the total quantity of processed biomass in the production unit.

4.6 Verification of the information regarding the agricultural phase

Table 1 presents the information declared by the biofuel producer regarding biomass producers. The guidelines given in the table are valid for both the biofuel producer and the inspecting firm.

Some parameters are mandatory for all eligible biomass producers. Such information is not declarable as "default profile". If any of the information is not provided, the biomass producer should be considered "ineligible" in calculating the fraction of the volume of eligible biofuel.

For each eligible biomass producer, except for the mandatory parameters as primary parameters, all other parameters must be filled in exclusively with default data or exclusively with primary data.

The biofuel producer should fill in data related to agricultural production (primary or default) in the corresponding charts of the work files, for each route (Primary_agricultural_data / Default_agricultural_data).

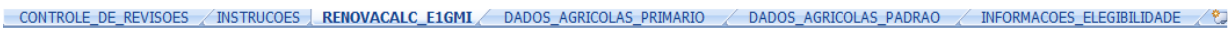

Figure 3 – Spreadsheets for filling in the data of biomass producers

Data regarding biomass producers that are not eligible should not be registered.

The information must be filled considering the rural property (farm), and each line of the sheets filled with “Primary_agricultural_data” and “Default_agricultural_data” referring to a certain biomass producer.

It should be possible to prove all the declared data and the specific production of a certain eligible rural property through traceability systems of origin.

In case of crop succession in the same calendar year (i.e. soybean and corn), the producer should preferably seek to subdivide the production system into distinct stages. The guideline is that all supplies used for a given crop should be assigned to it until the time of its harvest. After harvest, the supplies are allocated to subsequent plantation, until the respective harvest. When it is difficult to subdivide the steps, a duly justified criterion of apportionment can be adopted

Table 1: Declared information for the agricultural phase

	Parameter	Description	Unit	Requirement	Guidelines
1	Planting system	**Conventional** - Involves the preparation of primary soil, which consists of deeper operations, usually carried out with a plough, aimed at breaking compacted layers of soil and the elimination or burial of vegetation cover. In the secondary preparation, operations are more superficial, using grids or planers to level, scrape, destroy surface crusts, incorporate agrochemicals and eliminate weeds. Seeding is the row or in-line. **Direct, with crop rotation** - No-tillage is the sowing system in which the seed is placed directly on undisturbed soil. A small groove (or pit) of sufficient depth and width is opened to ensure good coverage of the seed with soil. Crop rotation is the orderly and regular alternation in the cultivation of different plant species in time sequence in a given area. **Direct, with crop succession** - No-tillage is the sowing system in which the seed is placed directly on undisturbed soil. A small groove (or pit) of sufficient depth and width is opened to ensure good coverage of the seed with soil. Crop succession consists of alternating crops, without ordering and regularity of the species employed. **Minimum/Reduced** - system in which less soil mobilization is used, when compared to the conventional system. The sowing is carried out directly on the plant cover previously dried with herbicide, without soil stirring.	N.A.	Non-mandatory information	Informational parameter. It does not affect the carbon intensity of the biofuel Therefore, it waivers verification.

Table 1: Continued

	Parameter	Description	Unit	Requirement	Guidelines
2	Total area	Total area destined for corn production (sum of the areas related to all rural properties of the corn producer, if applicable).	Ha	Mandatory primary information for eligible corn producers.	Verify by satellite images, spatial resolution better than or equal to 30 m, and geoprocessing techniques and, if available, by geoprocessing system for verification of eligibility criteria.
3	Total Production	Total amount of corn produced in the total production area (requirement 2). This parameter should be reported on a wet basis. The respective moisture content should be informed.	ton corn, on moist basis Moisture content: %	Mandatory primary information for eligible corn producers.	Check purchase records when the supplier sells all of its production to only one biofuel producer. Verify internal records, confirming at least that the total production purchased by the biofuel producer is less than or equal to the total production declared for each supplier. The average moisture content should be calculated in a weighted manner using data on moisture content throughout the year.
4	Quantity purchased by the biofuel production unit	Total quantity of corn purchased by the biofuel production unit.	ton corn	Mandatory primary information for eligible corn producers.	Verify systems records of purchasing information.

Table 1: Continued

	Parameter	Description	Unit	Requirement	Guidelines
5	Total collected straw	Refers to the total amount of straw collected annually in the total production area (requirement 2).	Straw t in dry base	Mandatory information for all the eligible corn producers.	Check system records.
6	Correctives consumption	Quantity consumed of each corrective (calcareous limestone, dolomitic limestone and agricultural plaster), divided by the total production (requirement 3).	Kg/t corn	Information in the "default profile" and mandatory in the "specific profile".	Verify records of input purchase and internal control of stock.
7	Seeds	Refers to the total annual amount of seeds used in the total production area (requirement 2) divided by the total grain production (requirement 3).	Kg/t corn	Information in the "default profile" and mandatory in the "specific profile".	Check internal records. If the corn seed weight information is not available, use Table 3.

Table 1: Continued

	Parameter	Description	Unit	Requirement	Guidelines
8	Consumption of synthetic fertilizers	Amount consumed of each element (N, P2O5 and K2O per source), applied in the total area (requirement 2), divided by the total production (requirement 3).	Kg element / t corn	Information in the "default profile" and mandatory in the "specific profile".	Verify records of input purchase and internal stock control. Each fertilizer source has a specific amount of N, P2O5 and K2O (%). To identify this source, refer to the fertilizer label or technical specification document. If label information is not available, use Table 2 to report the amount of each nutrient. In the case of application of formulations (NPK), it is also necessary to identify the source and quantity of each element. If the source of nutrients is not declared by the fertilizer manufacturer for commercial reasons, the producer can opt for the declaration in "other".
9	Consumption of organic fertilizers/organominerais	Amount of industrial waste and other organominerais fertilizers used as fertilizers by source (filter cake, ash and soot, others) applied in the total area (requirement 2), divided by the total production (requirement 3). The nitrogen content in each source should be reported.	Kg/t corn **Nitrogen content:** G N/kg	Information in the "default profile" and mandatory in the "specific profile".	Verify records of input purchase and internal stock control. The N content of the fertilizer should be reported by the manufacturer or determined by laboratory analysis.

Table 1: Continued

	Parameter	Description	Unit	Requirement	Guidelines
10	Consumption of fuels and electricity from the grid	Refers to the consumption of fuels (sum of agricultural operations, irrigation, displacement of people, etc.) in total area (see requirement 2), divided by total production (requirement 3). The own and third party fuels must be accounted for (in the case of outsourced services, the fuel used for these operations must be accounted for by the plant or supplier that contracted this service).	L/t corn Nm^3/t corn kWh/t corn	Information in the "default profile" and mandatory in the "specific profile".	For fuels, check purchase records and internal control. For electricity, verify consumption of kWh in the statement provided by the energy distributor. In the event that the producing unit does not have proof of all fuel used, the option of specific profile declaration cannot be chosen. All the fuel used in the property must be counted, if it is not possible to individualize consumption. In the case of third party use of service invoice for proof of fuel consumption amount, the note shall specify separately the expenditure on fuels. Aviation fuel, including aircraft ethanol, shall not be accounted for. The fuel used to transport the grain to the industrial plant should not be accounted for, since this fuel is counted in the industrial stage.

As detailed in Table 1, information on the amount of N, P_2O_5 and K_2O in each fertilizer used should be entered into RenovaCalc. For correct identification, the fertilizer label or technical specifications document should be consulted. If label information is not available, use Table 2 to report the amount of each nutrient.

The field "other" should only be filled if the source of nitrogen, phosphorus or potassium from the fertilizer is different from the sources already listed in RenovaCalc. When formulated fertilizers are used, sources of nitrogen, phosphorus and potassium should be identified and the fields corresponding to each source should be filled in.

Table 2: Composition in nitrogen, phosphorous, and potassium of chemical fertilizers.

Fertilizers	**Composition (%)**		
	N	**P_2O_5**	**K_2O**
Diluted Nitric Acid	12	0	0
Anhydrous Ammonia	82	0	0
Ammonium Bicarbonate	18	0	0
Ammonium Chloride	25	0	0
Potassium Chloride	0	0	59
Monoammonium Phosphate (MAP)	10	51	0
Diammonium Phosphate (DAP)	17	46	0
Ammonium Nitrate	34	0	0
Ammonium Nitrate and Calcium	25	0	0
Calcium Nitrate	15	0	0
Sodium Nitrate	15	0	0
Ammonium Nitrate Sulfate	26	0	0
Potassium Nitrate	13.5	0	44
Ammonium Nitrate Phosphate	8	52	
“Phosphate Rock”	0	25	0
Ammonium Nitrate Ammonium Nitrate and Urea	32	0	0
Ammonium Sulfate	20.5	0	0
Potassium Sulfate	0	0	49
Simple Superphosphate	0	20	0
Triple Superphosphate	0	46	0
Urea	45	0	0

If information on moisture content and nitrogen content in the industrial residues employed and corn seed weight is not available, the values reported in Table 3 may be considered. In these situations, no verification and proof of calculation memory is required to determine the values.

Table 3: Additional information for the agricultural phase for different crops.

Parameter	Value	Unit	Plantation
Moisture of total production	13.00	%	Corn
Seeds mass	24.5	Kg/bag[2]	Corn

The calculation memory of the composition of fertilizers, as well as the other parameters to be entered in RenovaCalc must be registered by the biofuel producer and audited by the inspecting firm, and must be included in the documents of the audit process.

4.7 Verification of information regarding the industrial phase

Table 4 presents the information to be declared by biofuel producers regarding their industrial processes. The guidelines given in the tables are valid for both the biofuel producer and the inspecting firm.

All information is mandatory in RenovaCalc, and the total amount of corn processed and the total yield of all products must be declared, regardless of compliance with eligibility criteria. When there is no production of a product, the yield of 0.00 units/ton of corn must be declared. For example, if there is no hydrated ethanol production, the hydrated ethanol yield should be reported as 0.00 L/t corn.

In the industrial phase, the only information that can be declared with typical data refers to the biomass moisture used as fuel in the industrial plant, some raw materials and co-products, and the lower calorific value (PCI) of biogas. If the values in Table 4 or PCI for 34.44 MJ/NM3 are declared, no verification and proof of calculation memory is required to determine the values.

The calculation memory of all unit conversions made for the parameters entered in RenovaCalc must be recorded by the biofuel producer and audited by the inspecting firm, and must be included in the audit process documents.

Table 4: Typical moisture contet

Parameter	Moisture Content
Wood chips	35%
Wood	45%
Forest residues	45%
Corn	13%
Distillers Dried Grains	10%
Distillers Dried Grains with Solubles	10%
Corn Gluten Meal	10%
Corn Gluten Feed	10%

[2] A bag is considered to have 60,000 corn seeds.

The fields that do not contain indication of purity must be filled with quantity based on mass of the product of interest. Thus, when a given input is marketed with purity content X, the amount of the input actually used must be entered in RenovaCalc and the calculation must be made in a side document.

Table 5: Information declared for industrial phase

	Parâmetro	Descrição	Unidade	Obrigatoriedade	Orientações
1	Amount of corn processed	Total annual amount of grain processed. This parameter should be reported on a wet basis. Moisture content should be reported. Inform the transport distance traveled by corn from the warehouse to the plant.	T corn/year, in a moist base **Moisture content**: % **Transport distance**: km	Mandatory information. The average total income should be reported, regardless of compliance with eligibility criteria.	Check purchase records, inventory control and other internal controls. Typical data for the moisture content may be used, according to Table 4, in this case no verification is necessary.
2	Yield of anhydrous ethanol	Refers to the total volume (corrected for 20 °C temperature) of anhydrous ethanol produced annually divided by the amount of corn processed (requirement 1).	L/t corn	Mandatory information. The average total income should be reported, regardless of compliance with eligibility criteria.	Check internal records.
3	Yield of hydrated ethanol	Refers to the total volume (corrected for 20 °C temperature) of hydrated ethanol produced annually divided by the amount of corn processed (requirement 1).	L/t corn	Mandatory information. The average total income should be reported, regardless of compliance with eligibility criteria.	Check internal records.

Table 5: Continued

	Parâmetro	Descrição	Unidade	Obrigatoriedade	Orientações
4	Yield of commercialized electric energy	Refers to the total amount of electricity traded annually divided by the amount of biomass processed (requirement 1).	kWh/t corn	Mandatory information. The total quantity marketed should be reported, regardless of compliance with eligibility criteria.	Check internal records.
5	Yield of *Distillers' Dried Grains (DDG)*	Refers to the total mass of DDG produced annually divided by the total annual amount of corn processed (requirement 1). Moisture content should be reported.	Kg/t corn **Moisture level: %**	Mandatory information. The total yield should be reported, regardless of compliance with eligibility criteria.	Check internal records. Typical data for the moisture level can be used, per Chart 4. In this case, no verification is needed.
6	Yield of Soluble Dry Grain Distillers (DDGS)	Refers to the total mass of DDGS produced annually divided by the total annual amount of corn processed (requirement 1). Moisture content should be reported.	Kg/t corn Moisture level: %	Mandatory information. The total yield should be reported, regardless of compliance with eligibility criteria.	Check internal records. Typical data for the moisture level can be used, per Chart 4. In this case, no verification is needed.
7	Corn meal yield "Corn Gluten Meal" (CGM)	Refers to the total mass of CGM produced annually divided by the total annual amount of corn processed (requirement 1). Moisture content should be reported.	Kg/t corn **Moisture level: %**	Mandatory information. The total yield should be reported, regardless of compliance with eligibility criteria.	Check internal records. Typical data for the moisture level can be used, per Chart 4. In this case, no verification is needed.

Table 5: Continued

	Parâmetro	Descrição	Unidade	Obrigatoriedade	Orientações
8	Corn protein yield "Corn Gluten Feed" (CGF)	Refers to the total mass of CGF produced annually divided by the total annual amount of corn processed (requirement 1). Moisture content should be reported.	Kg/t corn Moisture level: %	Mandatory information. The total yield should be reported, regardless of compliance with eligibility criteria.	Check internal records. Typical data for the moisture content may be used, according to Table 4, in this case no verification is necessary.
9	Corn oil yield	Refers to the total mass of corn oil produced annually divided by the total annual amount of corn processed (requirement 1). Moisture content should be reported.	Kg/t corn Moisture level: %	Mandatory information. The total yield should be reported, regardless of compliance with eligibility criteria.	Check internal records.

Table 5: Continued

	Parâmetro	**Descrição**	**Unidade**	**Obrigatoriedade**	**Orientações**
10	Consumption of fuels and electricity from the grid	Refers to the consumption of fuels and electricity divided by the amount of corn processed (requirement 1).	l/t corn Nm^3/t corn kWh/t corn	Mandatory information. The total amount consumed should be reported.	For fuels, check records of input purchase and internal inventory control. All the fuel used in the property must be counted, if it is not possible to individualize consumption. In the case of use of service record made by third parties to prove the amount of fuel consumption, the record shall specify separately the expenditure on fuels. Aviation fuel, including ethanol used in aircraft, shall not be accounted for. For electricity, verify consumption of kWh in the statement provided by the energy distributor. The electricity of the administrative sector of the plant should be considered in accounting, if it is not possible to individualize the energy consumed.
11	Consumption of wood chips, firewood, and forest residues	Amount consumed of wood chips, firewood and forest residues, on a wet basis, divided by the amount of corn processed (requirement 1). Report the moisture content of these biofuels. In addition, the transport distance of these biofuels from the supplier to the plant should be reported.	Kg/t corn In moist base **Moisture level: %**	Mandatory information. The total amount consumed should be reported.	Check internal records. Typical data for the moisture content may be used, according to Table 4, in this case no verification is necessary.

4.8 Verification of information concerning the distribution phase

For the route of imported first-generation ethanol fuel produced from corn, the maritime logistic system is adopted, with no information to be filled in Renovacalc.

4.9 Sampling Plan

All types of RenovaCalc input data (fields to be filled in) must be audited by the inspecting firm. However, some data are consolidated and may come from many records, for example, the data of energy biomass producers. In such cases, the inspecting firms may choose to select records to be audited through a sampling plan.

The sampling plans shall be drawn up and signed by a technical officer. Sampling plans should be developed specifically for each type of data, considering the characteristics of the global population. The selection method, all statistical calculations, formulas, criteria and assumptions used to define the selection method and sample size should be documented.

The steps for choosing the sampling technique to be employed for each of the types of parameters audited (i.e., necessary to support the validation of RenovaCalc filling as well as the calculation of the eligible biofuel fraction) shall be documented and based on ISO 19011 and/or scientific literature. [3,4]

The sampling plan used in each certification process must be included among the documents to be submitted to ANP for validation of the process of issuing the Certificate of Efficient Biofuel Production.

In the case of the statistical sampling technique, the margin of error and the level of confidence should be determined by the technical person responsible for the sampling plan with presentation of the justification of the adopted values, the margin of error shall not be more than 10 % and the statistical confidence level shall not be less than 95 %. It is recommended that the selection method be of the type: by quantity of biomass purchased, with probability of selection proportional to the amount of biomass provided; or stratified, with strata formed by ranges of quantity of biomass provided.

When the inspecting firm opts for sampling to verify the eligibility criteria of biomass producers, the ten largest eligible biomass suppliers submitted by the biofuel producer should be audited. [5] Sampling of the others may be done, and the list of eligible producers submitted by the biofuel producer must be considered, excluding the ten largest ones mentioned above. That is, ineligible producers should not be included in the sampling selection universe (sample space), since they can never be considered in the program. For each of the biomass producers in the sample, all declared fields should be audited, as well as compliance with the eligibility criteria.

If the inspecting firm identifies, in the first audit, ineligible producers on the list of eligible producers submitted by the biofuel producer, the following procedures shall be carried out:

- ineligible producers should be removed from the list of eligible producers;

- the inspecting firm shall require the biofuel producer to re-check all records and data from the list of eligible producers;

[3] Brazil. Federal Court of Audit. Sampling Techniques for auditing / Federal Court of Audit. 2002.
[4] Arthur J. Wilburn. *Practical Statistical Sampling for Auditors.*
[5] List the producers in decreasing order in terms of bought biomass quantity and select the tens firsts.

- the biofuel producer must verify the list of eligible biomass producers, with record of document review and identification of all changes, which will be resubmitted to the inspecting firm;

- the inspecting firm shall carry out a new audit of the list of eligible biomass producers, and in the case of statistical sampling, those eligible biomass producers already verified in the first sample whose data are found must be excluded from the sample spaceif unchanged. That is, the inspecting firm will not audit the same eligible biomass producer twice.

If the inspecting firm identifies in the second audit about ineligible producer eligibility on the list of eligible producers submitted by the biofuel producer, only those actually verified by the inspecting firm can be considered as eligible biomass producers. That is, a third sampling for verification of the list of eligible biomass producers will no longer be accepted.

The report on the biofuel certification process should include:

- procedures on the verification of producers selected by sampling, as well as the list of eligible biomass producers (universe);

- set of audited producers (sample) with the ten largest biomass suppliers, for cases where sampling technique is chosen;

- identification of the audited fields;

- information about possible errors identified.

4.10 Report of the Biofuels Certification Process

The inspecting firm shall record the information collected to validate the data entered in RenovaCalc, the calculation of the fraction of the volume of eligible biofuel performed by the producer of biofuel, as well as compliance with eligibility criteria. The data and information must be necessary and sufficient to ensure validation of the calculated Energy-Environmental Efficiency Score and the fraction of the volume of eligible biofuel.

The report of the Biofuels Certification Process, cited in paragraph III of art. 31 of the ANP Resolution n° 758/2018, must be prepared and completed by the lead auditor and must be accompanied by the following documents:

• report of the on-site audits in the form of item I, art. 31 of ANP Resolution no. 758/2018;

• report of the public consultation for validation of the Energy-Environmental Efficiency Score (NEEA);

• sampling plan;

• report with calculation memory of the fields filled in RenovaCalc;

• report with calculation memory of the fraction of the volume of eligible biofuel;

• eligibility report contemplating analysis of images made by the inspecting firm

• declaration of eligibility signed by the importer of biofuel.

All information that is changed in relation to the data that has been made available in Public Consultation should be clearly identified and justified in the Final Report. If the NEEA or the fraction of the volume of eligible biofuel are changed as a result of public consultation events, they should be expressly indicated.

Changes that occur after the public consultation may entitle to a new deadline with the publication of a new public consultation notice that must contain expressly the reason for the change in values. ANP may, exceptionally, authorize a shorter time for this second public consultation in appropriate cases.

The Biofuel Certification Process report shall contain at least the following items:

• Cover sheet containing revision control (revision number, date, responsible for drafting and approval);

• identification, description and detailing of the biofuel production route;

• full identification of the inspecting firm;

• identification of the importer of biofuel;

• full identification of the biofuel production unit;

• the Energy-Environmental Efficiency Rating of the producing unit;

• the fraction of the volume of eligible biofuel;

• the sources of information and form of verification for each of the data filled in RenovaCalc, including the methodology used to confirm that there are no undeclared data (ie omission of information);

• the version of RenovaCalc used;

• the flow chart of the process and description of the production process

• a description of how the mass balance has been verified, including the specific mass values of raw materials, products and co-products;

• the public consultation period, list of documents made available in the consultation and the number of events;

• the period during which the evaluation was carried out;

• summary of the certification protocol and audit plan;

• all non-conformities identified during the certification process, accompanied by a treatment description;

• the audit results and conclusion;

• list of participants (full name, period of participation, assignments and signatures);

• technical qualification of the audit team and identification of the lead auditor;

• Signatures of the legal officer and the lead auditor.

All documents contained in the certification process of the importer of biofuels must be written in Portuguese, and the documents made available for public consultation and its report must have versions in Portuguese and English.

4.11 Issuance of the Certificate of Efficient Biofuel Production

The Certificate of Efficient Biofuel Production on behalf of the Importer of Biofuels must be issued after approval of the process by ANP. The certificate is automatically generated by the RenovaCalc System.

The certificate must contain the following items:

i. corporate name, National Register of Legal Entities (CNPJ), full address, name of the legal representative and lead auditor of the inspecting firm;
ii. Corporate name and full address of the biofuel importer;
iii. Identification of the biofuel production unit;
iv. Identification of the certificate[6] made by the acronym of the inspecting firm, [7] number of the inspecting firm in ANP, [8] sequential number, [9] month of issue and year of issue;
v. Date of issue and validity of the certificate.
vi. Energy-Environmental Efficiency Score (NEEA) calculated according to RenovaCalc;
vii. Identification of the fraction of the volume of eligible biofuel (%) relative to the total production of the producing unit, specific mass of the biofuel (t/m3) and lower calorific value (MJ/kg);
viii. CBIO emission factor.
ix. Production description and certified route.

The specific mass and lower calorific value of the biofuel that must be included in the Certificate of Efficient Biofuel Production are those listed in Table 17, Annex I, of ANP Resolution no 758/2018 and presented below in Table 6.

The CBIO emission factor is calculated automatically in the Certificate of Efficient Biofuel Production form, available on the ANP website, according to the Formula (3).

$$f = NEEA * \frac{f_{eligible}}{100} * \rho * PCI * 10^{-6} \quad (3)$$

Where f is the factor for CBIO emission; NEEA is the Energy-Environmental Efficiency Score (in gCO2eq/MJ); $f_{eligible}$ is the fraction of the volume of eligible biofuel (in %); ρ is the specific mass of the biofuel (t/m3); PCI if the low heat power of the biofuel (MJ/kg).

The CBIO emission factor may be multiplied by the volume (in liters) of biofuel purchased from the production unit linked and marketed by the importer of biofuel holder of the Certificate of Efficient Biofuel Production, in order to obtain the amount of CBIOs that each invoice will be entitled to issue.

[6] For example, ACRONYM OF THE INSPECTING COMPANY IN ANP.NUMBER OF THE INSPECTING FIRM SEQUENTIAL NUMBER.MONTH.YEAR
[7] Identification Acronym of the inspecting company at the ANP, released on ANP's website.
[8] Sequential identification number of the inspecting company at the ANP, published on the ANP's website.
[9] 3-digit sequential number to be used for each inspection firm + 2-digit month identification + 2-digit year identification.

Table 6: Specific mass and lower calorific value of biofuels

Product	Specific mass [t/m³]	Lower calorific value [MJ/kg]
Anhydrous ethanol [10]	0.791	28.26
Hydrated ethanol [1]	0.809	26.38
Biodiesel [1]	0.880	37.68
Biomethane[2]	0.00076	48.25
Paraffinic kerosene synthesized from fatty acids and hydro-processed esters (SPK–HEFA) [1]	0.735	43.54
Alternative diesel synthesized from fatty acids and hydro-processed esters (HEFA) [1]	0.782	43.98
Alternative gasoline synthesized from fatty acids and hydro-processed esters (HEFA) [1]	0.690	44.94

The Certificate of Efficient Biofuel Production may not be changed or revised.

ANP should be informed about any change required after approval of the certification process, and should be sent justification accompanied by all relevant documentation for evaluation.

ANP must approve the change in the certification process, which will lead to the cancellation of the previous certificate and issuance of a new certificate.

[1] Specific mass at the temperature of 273.15 °K (0 °C) and 101,325 kPa (1 atm).
[2] Biometane with 96,5% de metane, a 273,15 K (0 ºC) e 101,325 kPa (1 atm).