(Convenience translation into English from the original previously issued in Portuguese)

GRANBIO INVESTIMENTOS S.A.

Independent auditor’s report

Individual and consolidated financial statements
As at December 31, 2020

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Individual and consolidated financial statements
As at December 31, 2020

Contents

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INDEPENDENT AUDITOR'S REPORT ON THE INDIVIDUAL AND CONSOLIDATED FINANCIAL STATEMENTS

To the
Shareholders and Management of
GranBio Investimentos S.A.
São Paulo - SP

Opinion on the individual and consolidated financial statements

We have audited the individual and consolidated financial statements of GranBio Investimentos S.A. ("Company"), identified as parent company and consolidated, respectively, which comprise the statement of financial position as at December 31, 2020, and the respective statements of profit or loss, comprehensive income, changes in equity and cash flows for the year then ended, as well as the corresponding notes to the financial statements, including a summary of significant accounting policies.

Opinion on the individual financial statements

In our opinion the accompanying individual financial statements present fairly, in all material respects, the financial position of GranBio Investimentos S.A. as at December 31, 2020, its financial performance and its cash flows for the year then ended, in accordance with Brazilian accounting practices.

Opinion on the consolidated financial statements

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the financial position of GranBio Investimentos S.A. and its controlled companies as at December 31, 2020, its consolidated financial performance and its consolidated cash flows for the year then ended, in accordance with Brazilian accounting practices and International Financial Reporting Standards (IFRSs) issued by the International Accounting Standards Board (IASB).

Basis for opinion on the individual and consolidated financial statements

We conducted our audit in accordance with Brazilian and International Standards on Auditing (ISAs). Our responsibilities under those standards are further described in the "Auditor's Responsibilities for the Audit of the Individual and Consolidated Financial Statements" section of our report. We are independent of the Company and its controlled companies in accordance with the relevant ethical principles established in the Code of Ethics for Professional Accountants and in the professional standards issued by the Brazilian Federal Council of Accounting (CFC), and we have fulfilled our other ethical responsibilities in accordance with these standards. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Emphasis - Investment realization stage

We draw attention to Notes 1 and 16 to the individual and consolidated financial statements, which describe that the Company and its controlled companies have reported recurring losses on their operations and accumulated losses in equity in the amount of R$ 569,127 thousand (R$ 399,985 thousand as at December 31, 2019) in the individual and consolidated financial statements, as well as current liabilities in excess of current assets at the year ended December 31, 2020, in the amount of R$ 367,418 thousand in the consolidated financial statements (R$ 403,780 thousand as at December 31, 2019). This situation is mainly due to the fact that the ethanol plant of the controlled company Bioflex Agroindustrial S.A. is currently in the stage of investments to reach its business capacity of continual operations and, consequently, the recoverability of the investments made in fixed assets and technology. Our opinion is not qualified in respect of this matter.

Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements for the current year. These matters were addressed in the context of our audit of the individual and consolidated financial statements as a whole and in forming our opinion thereon and, accordingly, we do not provide a separate opinion on them.

Compliance with contractual clauses in loan and financing agreements

The Company and its controlled companies are a party to several loan and financing agreements totaling R$ 154,997 thousand and R$ 643,311 thousand, in the individual and consolidated financial statements, respectively. Certain agreements contain debt anticipation clauses involving certain obligations which, when not fulfilled, may trigger cross-acceleration and cross-default covenants.

As mentioned in Note 17, Management considers, based on its understanding and on the understanding of its legal advisors, that there is no non-compliance with non-financial covenants related to the filing of protests of bill.

Management and its legal advisors believe that there is no legal or contractual basis for early maturity, and that contractual amendments establishing a grace period (standstill agreement) by the creditors until the reporting date guarantee the Company and its controlled companies the unconditional right to continue maintaining the deferral of settlement based on the contractually established terms.

Considering the complexity of judgment in interpreting agreements with some financial institutions, the need for robust and timely internal controls and the relevance of this matter in relation to the Company's liquidity risk, we consider this a key audit matter.

How the matter was addressed in our audit

Our audit procedures included, among others:

- Reading loan and financing agreements;
- Issuing confirmation letters and receiving confirmation letter responses to confirm the balances recorded in the financial statements;
- Understanding Management's analysis of the covenants and the consistency of the application of the understanding in relation to the financial statements disclosed in previous periods;
- Obtaining the opinion of the Company's external legal advisors on a given transaction.

The results obtained by the audit procedures previously mentioned are consistent with Management's evaluation presented in the notes, in the context of the individual and consolidated financial statements taken as whole.

Impairment of non-financial assets	How the matter was addressed in our audit
As at December 31, 2020, the Company has fixed assets in the amount of R$ 916,842 thousand in the controlled company Bioflex Agroindustrial S.A., and in the amounts of R$ 476,676 thousand and R$ 120,996 thousand in the controlled company GranBio LLC, referring to technology acquired and goodwill from expected future profitability, respectively. In the process of measuring the corresponding recoverable amounts, complex judgments are used by Management, mostly based on internally developed assumptions, which are not observable, and for a period longer than that formally supported by the approved business plan of the Group. Any changes in the assumptions used for the impairment test prepared by Management could have significant effects on the individual and consolidated financial statements and, for this reason, we consider this a key audit matter.	Our audit procedures included, among others: ▪ Analyzing the competence and objectivity of external experts hired by Management; ▪ Having our experts assess the model and the reasonableness of the assumptions considered and arithmetic recalculations; ▪ Comparing data used with comparable observable data; ▪ Confirming observable data based on data sources mentioned in the external experts' report; ▪ Comparing the financial performance considered in the model with prior periods (history); ▪ Verifying whether the methodology used was consistent with assumptions adopted in the previous year. We have identified failures in internal controls regarding the formalization of some assumptions, however, with no material adjustments to be recorded.

Other matters

Statements of value added

The individual and consolidated statements of value added for the year ended December 31, 2020, prepared under the responsibility of the Company's Management and presented as supplementary information for IFRS purposes, were submitted to the same audit procedures followed for the audit of the Company's financial statements. In order to form an opinion, we have checked whether these statements are reconciled with the financial statements and accounting records, as applicable, and whether their form and contents meet the criteria established in NBC TG 09 - Statement of Value Added. In our opinion, the statements of value added were properly prepared, in all material respects, in accordance with the criteria established in that Standard, and are consistent with the individual and consolidated financial statements taken as a whole.

Audit of previous year's amounts

The individual and consolidated financial statements for the year ended December 31, 2019, were previously audited by other independent auditors, whose report thereon, dated August 31, 2020, was not qualified and had an emphasis paragraph related to the business capacity of the ethanol plant of the controlled company Bioflex Agroindustrial S.A.

Other information accompanying the individual and consolidated financial statements and auditor's report

The Company's Management is responsible for the other information that comprises the Management Report.

Our opinion on the individual and consolidated financial statements does not cover the Management Report and we do not express any form of audit conclusion thereon.

In connection with our audit of the individual and consolidated financial statements, our responsibility is to read the Management Report and, in doing so, consider whether the report is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is material misstatement of this Management Report, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of Management and those charged with governance for the individual and consolidated financial statements

The Company's Management is responsible for the preparation and fair presentation of the individual and consolidated financial statements in accordance with Brazilian accounting practices and with the International Financial Reporting Standards, issued by IASB, and for such internal control as Management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the individual and consolidated financial statements, Management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless Management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Company's and its controlled companies' financial reporting process.

Auditor's responsibilities for the audit of the individual and consolidated financial statements

Our objectives are to obtain reasonable assurance about whether the individual and consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Brazilian and International Standards on Auditing will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Brazilian standards and ISAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the individual and consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls;

- Obtain an understanding of internal controls relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's and its controlled companies' internal controls;
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and disclosures made by Management;
- Conclude on the appropriateness of Management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the individual and consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern;
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the individual and consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation;
- Obtain sufficient and appropriate audit evidence regarding the financial information of the entities or business activities within the group to express an opinion on the individual and consolidated financial statements. We are responsible for the direction, supervision and performance of the Group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the planned audit and significant audit findings, including any significant deficiencies in internal controls that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and communicate to them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

Of the matters communicated to those charged with governance, we determine those that were of most significance for the audit of the financial statements for the current year and which are therefore the key audit matters. We describe these matters in our auditor's report unless laws or regulations preclude public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the benefits of such communication to public interest.

The accompanying financial statements have been translated into English for the convenience of readers outside Brazil.

São Paulo, December 17, 2021.

BDO RCS Auditores Independentes SS
CRC 2 SP 013846/O-1

Ricardo Vieira Rocha
Accountant CRC 1 BA 026357/O-2 – S - SP

GranBio Investimentos S.A.

Statements of financial position as at December 31, 2020 and 2019

(In thousands of Brazilian Reais)

		Parent company		Consolidated	
Assets	**Note**	**2020**	**2019**	**2020**	**2019**
Current assets					
Cash and cash equivalents	7	-	2	397	1,289
Short-term investments	8	58,962	-	7,231	-
Accounts receivable	9	-	-	4,060	2,940
Advances to suppliers		537	136	6,443	4,620
Inventories	10	-	-	8,253	9,670
Recoverable taxes		-	2,513	2,212	2,373
Related-party loans	11	2,772	140,521	-	12,378
Other accounts receivable from related parties	11	-	14,068	-	-
Prepaid expenses		396	45	1,778	1,574
Total current assets		62,667	157,285	30,374	34,844
Noncurrent assets					
Recoverable taxes		2,454	-	7,279	6,689
Judicial deposits		197	109	1,736	1,394
Other receivables	12	-	23,123	76,961	83,459
Other accounts receivable from related parties	11	-	-	83,466	61,776
Investments	13	959,172	761,042	-	-
Property, plant and equipment	14	3,030	2,013	948,131	973,786
Intangible assets	15	-	1	627,258	505,322
Total noncurrent assets		964,853	786,288	1,744,831	1,632,426
Total assets		**1,027,520**	**943,573**	**1,775,205**	**1,667,270**

		Parent company		Consolidated	
Liabilities	**Note**	**2020**	**2019**	**2020**	**2019** (Reclassified)
Current liabilities					
Loans, financing and debentures	17	16,357	29,324	164,373	245,648
Leases		58	872	59	873
Trade payables	18	4,804	1,446	49,716	42,154
Related-party loans	11	155,153	131,583	122,240	104,042
Other accounts payable to related parties	11	-	817	-	817
Tax and labor obligations		679	96	16,024	10,413
Customer advances		-	-	194	-
Other accounts payable	19	29	60	34,922	29,880
Deferred revenue	20	-	-	10,264	-
Government grants	21	-	-	-	4,797
Total current liabilities		177,080	164,198	397,792	438,624
Noncurrent liabilities					
Loans, financing and debentures	17	138,640	88,448	478,938	376,937
Leases		2,017	959	2,017	959
Tax and labor obligations		62	-	3,005	-
Deferred revenue	20	-	-	11,952	4,360
Deferred income and social contribution taxes	28	-	-	58,003	48,752
Customer advances		-	-	2,265	-
Other accounts payable	19	-	-	107,135	102,271
Total noncurrent liabilities		140,719	89,407	663,315	533,279
Equity	22				
Share capital		977,662	900,000	977,662	900,000
Capital reserves		108,175	108,175	108,175	108,175
Asset and liability valuation adjustments		193,011	81,778	193,011	81,778
Accumulated losses		(569,127)	(399,985)	(569,127)	(399,985)
Equity attributable to controlling shareholders		709,721	689,968	709,721	689,968
Noncontrolling interest		-	-	4,377	5,399
Total equity		709,721	689,968	714,098	695,367
Total liabilities and equity		**1,027,520**	**943,573**	**1,775,205**	**1,667,270**

The accompanying notes are an integral part of the individual and consolidated financial statements.

GranBio Investimentos S.A.

Statements of profit or loss

Years ended December 31, 2020 and 2019

(In thousands of Brazilian Reais)

		Parent company		Consolidated	
	Note	**2020**	**2019**	**2020**	**2019**
Revenue from goods sold and services rendered	23	-	-	39,975	33,537
Cost of goods sold and services rendered	24	(68)	-	(78,498)	(61,692)
Gross profit/loss		(68)	-	(38,523)	(28,155)
Operating income and (expenses)					
Administrative and general expenses	25	(9,542)	(4,917)	(72,931)	(63,461)
Other operating income (expenses)	26	(336)	4	12,434	213,470
Share of profit (loss) of investess under the equity method	13	(129,798)	86,290	-	12,815
Operating income before financial income (losses), net		(139,744)	81,377	(99,020)	134,669
Financial revenue	27	957	206	12,349	2,126
Financial expenses	27	(30,355)	(11,183)	(88,307)	(59,786)
Net financial income/loss		(29,398)	(10,977)	(75,958)	(57,660)
Profit or loss before income and social contribution taxes		(169,142)	70,400	(174,978)	77,009
Deferred income and social contribution taxes	28	-	-	4,814	1,556
Profit or loss attributable to shareholders		**(169,142)**	**70,400**	**(170,164)**	**78,565**
Controlling interest		(169,142)	70,400	(169,142)	70,400
Noncontrolling interest		-	-	(1,022)	8,165
Profit or loss for the year		**(169,142)**	**70,400**	**(170,164)**	**78,565**
Number of shares		108,133	100,221	108,133	100,221
Earnings (losses) per share		(1.5642)	0.7024	(1.5642)	0.7024

The accompanying notes are an integral part of the individual and consolidated financial statements.

GranBio Investimentos S.A.

Statements of comprehensive income

Years ended December 31, 2020 and 2019

(In thousands of Brazilian Reais)

	Parent company		Consolidated	
	2020	**2019**	**2020**	**2019**
Profit or loss for the year	(169,142)	70,400	(170,164)	78,565
Other comprehensive income to be reclassified as profit or loss in subsequent periods:				
Cumulative translation adjustment - CTA (note 13.c and 22.b)	111,233	(1,313)	111,233	(1,313)
Comprehensive income for the year	**(57,909)**	**69,087**	**(58,931)**	**77,252**
Profit attributable to:				
Owners of the Company			(57,909)	69,559
Noncontrolling shareholders			(1,022)	7,693
Total comprehensive income			**(58,931)**	**77,252**

The accompanying notes are an integral part of the individual and consolidated financial statements.

GranBio Investimentos S.A.

Statements of changes in equity

Years ended December 31, 2020 and 2019

(In thousands of Brazilian Reais)

		Attributable to owners of the Company							
	Note	**Share capital**	**Capital to be paid-in**	**Capital reserve**	**Asset and liability valuation adjustments**	**Accumulated losses**	**Equity attributable to shareholders**	**Noncontrolling interest**	**Total equity**
Balances as at January 01, 2019		**900,000**	**-**	**107,589**	**83,091**	**(470,385)**	**620,295**	**-**	**620,295**
Exchange rate gains or losses	22.b	-	-	-	(1,313)	-	(1,313)	(472)	(1,785)
Capital to be paid-in	22.a	249,869	(249,869)	-	-	-	-	-	-
Monetary restatement of shares		-	-	586	-	-	586	-	586
Noncontrolling interest before the business combination	6	-	-	-	-	-	-	(2,294)	(2,294)
Profit or loss for the year		-	-	-	-	70,400	70,400	8,165	78,565
Balances as at December 31, 2019		**1,149,869**	**(249,869)**	**108,175**	**81,778**	**(399,985)**	**689,968**	**5,399**	**695,367**
Exchange rate gains or losses	22.b	-	-	-	111,233	-	111,233	-	111,233
Capital increase	22.a	-	77,662	-	-	-	77,662	-	77,662
Residual share cancellation	22.a	(172,207)	172,207	-	-	-	-	-	-
Profit or loss for the year		-	-	-	-	(169,142)	(169,142)	(1,022)	(170,164)
Balances as at December 31, 2020		**977,662**	**-**	**108,175**	**193,011**	**(569,127)**	**709,721**	**4,377**	**714,098**

The accompanying notes are an integral part of the individual and consolidated financial statements.

GranBio Investimentos S.A.

Statements of cash flows

Years ended December 31, 2020 and 2019

(In thousands of Brazilian Reais)

	Parent company		Consolidated	
	2020	**2019**	**2020**	**2019**
Cash flows from operating activities				
Profit or loss for the year	(169,142)	70,400	(170,164)	78,565
Adjustments for:				
Depreciation (Note 14)	929	913	36,047	25,901
Amortization (Note 15)	1	141	18,042	11,783
Derecognition of PP&E (Note 14)	1,115	6	4,787	1,059
Derecognition of biological assets	-	-	-	3,228
Gain from business combination (Note 26)	-	-	-	(218,128)
Share of profit (loss) of investees under the equity method (Note 13)	129,798	(86,290)	-	(12,815)
Provision for interest on lease	1,002	216	1,002	216
Provision for interest on loans, financing and debentures (Note 17.b)	23,319	10,902	61,683	58,820
Deferred income and social contribution taxes	-	-	(4,816)	(1,556)
Write-off of government grant (Note 21)	-	-	(4,797)	-
Provision for (reversal of) losses for inventory realization (Note 10)	-	-	8,608	3,856
Result of adjustments for the year	(12,978)	(3,712)	(49,608)	(49,071)
Changes in assets and liabilities:				
Accounts receivable	-	5	15,803	(10)
Advance to suppliers	(401)	50	(1,823)	7,683
Inventories	-	-	(7,159)	931
Recoverable taxes	59	(106)	(430)	(327)
Prepaid expenses	(351)	-	164	-
Other receivables	-	(12)	23,922	(3,137)
Judicial deposits	(88)	8	(342)	80
Trade payables	3,358	121	4,859	7,395
Tax and labor obligations	645	(736)	8,632	5,459
Customer advances	-	-	2,459	-
Other accounts payable	(31)	(720)	(6,126)	2,108
Government grant	-	-	-	1,326
Net cash provided by (used in) operating activities	3,191	(1,390)	39,959	21,508
Interest on amortized loans, financing and debentures (Note 17 b)	(585)	(6,984)	(2,778)	(20,188)
Net cash provided by (used in) operating activities	(10,372)	(12,086)	(12,427)	(47,751)
Cash flows from investing activities				
Short-term investments	(58,962)	-	(7,231)	-
Other investments	-	-	-	21,402
Acquisition of investments (Note 13)	(71,475)	-	-	-
Acquisition of intangible assets (Note 15)	-	-	(2,496)	(2,102)
Acquisition of PPE (Note 14)	(3,061)	(150)	(7,190)	(22,073)
Net cash used in investment activities	(133,498)	(150)	(16,917)	(2,773)
Cash flows from financing activities				
Acquisition/write-off of equity interest	-	26	(19,734)	(11,215)
Loans, accounts payable and accounts receivable - Related parties	130,134	(16,406)	87,628	34,017
Payment of loans, financing and debentures - principal (Note 17 b)	(509)	(574)	(2,282)	(9,716)
Loans and financing secured - principal (Note 17 b)	15,000	-	15,000	-
Debenture buyback	-	-	(50,897)	-
Lease payments	(757)	(1,009)	(757)	(1,009)
Net cash used in financing activities	143,868	(17,963)	28,958	12,077
Effect of fluctuation in exchange rates on cash and cash equivalents	-	-	(506)	(11,423)
Application of cash and cash equivalents	(2)	(30,199)	(892)	(49,870)
Cash and cash equivalents as at January 01	2	30,201	1,289	51,159
Cash and cash equivalents as at December 31	-	2	397	1,289
Decrease in cash and cash equivalents	(2)	(30,199)	(892)	(49,870)

The accompanying notes are an integral part of the individual and consolidated financial statements.

GranBio Investimentos S.A.

Statements of value added

Years ended December 31, 2020 and 2019

(In thousands of Brazilian Reais)

	Parent company		Consolidated	
	2020	**2019**	**2020**	**2019**
Revenue				
Sales of merchandise, goods and services	-	-	42,014	35,677
Other revenue	(336)	4	12,434	213,470
	(336)	**4**	**54,448**	**249,147**
Inputs acquired from third parties				
Costs	(68)	-	(39,605)	(57,474)
Material, electricity, outsourced services and other operating expenses	(8,036)	(2,420)	(34,912)	(16,922)
	(8,104)	**(2,420)**	**(74,517)**	**(74,396)**
Gross value added	**(8,440)**	**(2,416)**	**(20,069)**	**174,751**
Depreciation and amortization	(851)	(1,058)	(54,208)	(37,684)
	(851)	**(1,058)**	**(54,208)**	**(37,684)**
Net value added	**(9,291)**	**(3,474)**	**(74,277)**	**137,067**
Transferred value added				
Share of profit (loss) of investees under the equity method	(129,798)	86,290	-	12,815
Financial revenue	445	206	11,837	2,126
	(129,353)	**86,496**	**11,837**	**14,941**
Value added to be distributed	**(138,644)**	**83,022**	**(62,440)**	**152,008**
Distribution of value added				
Personnel				
Direct compensation	226	1,112	9,419	9,530
Benefits	167	293	2,595	2,712
Government Severance Indemnity Fund for Employees (FGTS)	21	34	918	832
	414	**1,439**	**12,932**	**13,074**
Taxes and contributions				
Federal	393	-	4,905	542
State	-	-	2,245	41
	393	**-**	**7,150**	**583**
Interest on borrowed capital				
Interest expenses	29,691	11,183	87,642	59,786
	29,691	**11,183**	**87,642**	**59,786**
Return on equity capital				
Retained earnings	(169,142)	70,400	(169,142)	70,400
Noncontrolling interest	-	-	(1,022)	8,165
	(169,142)	**70,400**	**(170,164)**	**78,565**
Total	**(138,644)**	**83,022**	**(62,440)**	**152,008**

The accompanying notes are an integral part of the individual and consolidated financial statements.

Notes to the individual and consolidated financial statements

(In thousands of Brazilian Reais)

1 Operations

GranBio Investimentos S.A. (“GranBio” or “Company”) is a privately held company having its registered office at the address Av. Professor Almeida Prado, 532 – Edif. Prédio, 50, Butantã, São Paulo, São Paulo state. It was founded on June 13, 2011. Its ultimate and direct parent company is Graninvestimentos S.A., which has its registered office at the address at Av. Faria Lima, 3144 – 3º andar, Jardim Paulistano, São Paulo, in São Paulo state.

Granbio is a holding company and its subsidiaries are mainly engaged in: (a) creating viable flexible biorefineries that can be rolled out on an industrial scale to convert biomass into cellulose sugar, biofuels, biochemicals, nanocellulose and other ligno-cellulosic materials, in addition to electricity; (b) developing and trading competitive varieties of biomass, especially sugar cane Energy Cane Vertix (“Energy Cane”); (c) developing and licensing patents and intellectual property in the renewable sector using biomass and (d) generating and cogenerating electricity from biomass.

Energy Cane Vertix is a proprietary brand of GranBio, used to commercialize varieties of biomass developed by the Company. It is considered a lower cost biomass source compared to wood and sugar cane straw biomass. GranBio holds 11 Protected Cultivars (Vertix 1 to Vertix 11), already licensed by the subsidiary BioVertis.

Through its subsidiaries in the United States of America (USA), the Company also sells technology to extract nanocellulose, through the separation of lignin and the production of biochemicals. GranBio LLC, located in the USA, has multiple patents for various proprietary technologies it has developed. Its research center is located in the city of Thomaston, Georgia, USA, and is used to develop proprietary technology and render research services to third parties for the development of applications to convert biomass into biochemicals and biofuels. GranBio LLC has a demonstration unit on a semi-commercial scale for the production of cellulosic ethanol in Michigan.

The Company recently restructured its business model to license its technologies and offers technological assistance to clients and partners in joint ventures in the production and processing of biomass in cellulose sugar, 2G (second-generation) Ethanol, 2G biochemicals and nanocellulose.

The Company's financial statements include the Company and its subsidiaries (jointly referred to as the “Group”).

Going concern status

In the financial year ended December 31, 2020, the Company presented a consolidated net working capital deficiency of R$ 367,418 and accumulated losses of R$ 569,127.

This situation requires that Management assesses the ability of the Company and its subsidiaries to keep generating sufficient cash flows to assure they continue as a going concern for the foreseeable future by either generating operating cash flows, through obtaining external funding or shareholder funding.

Management's assessment considered the Company's business plan, which was prepared based on the current status of assets and liabilities and the planned future actions, as well as certain significant macroeconomic assumptions and estimates of interest and inflation rates, as well as in the assessment of the financial capacity of shareholders to honor the capital commitment assumed in case of failure in the action plan prepared by the Company.

The planned actions that impact the future cash flow estimates are:

- In June 2021, the Company redeemed funds from a short-term investment to cover the full early amortization of one of the Company's financing contracts with Financiadora de Estudos e Projetos – FINEP (no. 09.14-0013.00) in the amount of R$ 6,747, thereby reducing the Company's overall indebtedness.
- In July 2021, the parent company GranInvestimentos S.A. contributed funds to the Company to partially settle the financing held by the subsidiary BioFlex Agroindustrial S.A. from BNB and the National Bank for Economic and Social Development – BNDES, totaling R$ 34,788;
- In August 2021, the parent company GranInvestimentos S.A. and the ultimate individual beneficiaries acquired all of the nonconvertible debentures issued by BioFlex Agroindustrial S.A., thereby reducing the Company's overall indebtedness.

The planned actions that impact the future cash flow estimates are:

- A standstill agreement was negotiated with the National Bank for Economic and Social Development - BNDES to temporarily suspend the amortization of its debt payments for an 8-month term commencing October 2021.
- Negotiating a standstill agreement with the banks Itaú, Banco do Brasil and Bradesco to temporally suspend the amortization of its debt payments for the term of 8 months commencing October 2021.
- The Company is pursuing: (i) alternatives to fund its existing obligations and its growth strategy with financial institutions and the capital markets both in Brazil and the United States, pursuing additional financial transactions of approximately R$ 250,000, (ii) alternatives to sell non-operating assets in Brazil and the USA; and (iii) identifying a strategic partner to work alongside it on the development of a strategic plan for technology sales and licensing.

Management has recently restructured its business model to focus on licensing its technologies and offering technological assistance to clients and partners. In July 2020, GranBio established a strategic alliance with NextChem, a subsidiary of the Italian engineering group Maire Tecnimont with a worldwide presence in renewable energy. The strategic alliance seeks to expand the Company's position in licensing its technology for the production of 2G (second-generation) ethanol through the conversion of lignocellulosic biomass into renewable fuel with low carbon intensity. The contract signed by the parties was worth US$ 15,000 thousand, as stated in note 20.

The partnership combines the Company's technology and experience in second-generation biomass and biofuels with NextChem's engineering intelligence, project execution capacity and global presence to offer integrated services, feasibility studies, integrated projects, complete engineering and construction of manufacturing plants in different regions of the world.

Management is also evaluating its intellectual property portfolio to define non-core packages of patents that might be sold to generate cash. The eligible assets will be certain non-utilized butanol technology and certain non-core deicer technology.

Considering the business plan, Management believes that obligations will be paid as planned, and that the cash flow generation will be appropriate to meet its obligations in the foreseeable future.

However, if the business plan is unsuccessful, the Company's current shareholders have formally committed to continue supporting the Company in all actions required for continuing as a going concern, including the commitment to invest additional funds in an amount considered sufficient.

Based on its evaluation, Management has concluded that there is no significant uncertainty as to the Company's ability to continue as a going concern in the foreseeable future. Therefore, the parent company and its subsidiaries' financial statements have been prepared on a going concern basis.

Impacts of COVID 19 (Coronavirus) on the Company's business

On January 31, 2020, the World Health Organization (WHO) announced that the novel coronavirus (COVID-19) outbreak had become a global health emergency. On March 11, 2020, the WHO declared that the outbreak was a global pandemic. The outbreak has led governments and private sector entities to make impactful decisions, which coupled with the outbreak's potential have escalated uncertainty amongst economic agents and could have material impacts on our financial statements.

As disclosed in note 29 about market risks, we are exposed to fluctuation in the Brazilian Real to US Dollar exchange rate because of the investments in overseas subsidiaries of US$ 3,660 thousand as at December 31, 2020. The possible impacts of our exposure to this fluctuation will be reflected in the item asset and liability valuation adjustments in Other comprehensive income and Investments.

Management is continuously monitoring the outbreak's impacts on our operations and the Company's equity and financial position, in order to take appropriate measures to mitigate the impacts on operations and the financial statements. The following measures had been taken by the date the issuance of these financial statements was authorized:

- Renegotiations of contracts with suppliers in order to align the acquisition of consumables with production based on the expected demand for the Company's products in light of the current post COVID-19 reality.
- Implementation of temporary staff adjustment measures, in order to preserve cash, such as suspending recruitments and implementing an unremunerated leave program (layoffs); and
- Rescheduling the maturities of the Group's loans and financing with financial institutions and supplier payments in order to mitigate any liquidity risks.

2 List of subsidiaries

Direct subsidiaries

BioVertis Produção Agrícola Ltda. ("BioVertis"): Company engaged in the experimentation, development, plantation, production and collection of biomass, i.e., Vertix energy cane and sugarcane straw. The Company has Vertix energy cane licensing agreements with ethanol producers. Currently under this program a semi-commercial nursery is being created, which is expected to be ramped up to commercial plantation in the coming years.

BioEdge Agroindustrial Ltda.: Company that invests in commercial second-generation and biochemical plants.

BioCelere Agroindustrial Ltda: Company dedicated to scientific research in order to enhance laboratory processes that convert biomass into sugar and to create genetically modified microorganisms. The main achievement of this Company was the patenting and acceptance for commercial use of proprietary genetically modified yeast used in the production of second-generation ethanol.

BioPlant Agroindustrial Ltda.: Company engaged in the implementation and study of industrial solutions for the production of biochemicals and biofuels. The Company operations are currently on hold.

GranBio LLC: A US-based company engaged in investing in companies strategically related to the Company's business plan, by creating technologies for converting biomass into cellulose sugar for biochemicals and second-generation ethanol, in addition to developing nanocellulose for a range of industries. As stated in note 6, on March 13, 2019, the direct subsidiary GranBio LLC completed the acquisition of the entire capital of API Intellectual Properties Holdings LLC, GranBio Process Conversion Technologies Holdco LLC, GranBio Process Conversion Technologies LLC, GranAPI LLC and other affiliated companies, including GranBio Services Inc., AVAPCO LLC, America Green+ LLC, Alternative Bioprod Inv. LLC, Alpena Prototype Bioref LLC and Alpena Biorefinery Inc. The result of the business combination includes Alpena Biorefinery Inc, in Alpena, Michigan, the Thomaston Biorefinery and R&D Center in Thomaston, Georgia, operations teams, business research and an extensive intellectual property profile related to converting biomass into biofuels, biochemicals and nanocellulose, with around 200 patents awarded and pending. The companies previously classified as joint ventures are now therefore classified as indirect subsidiaries.

Indirect subsidiaries

BioFlex Agroindustrial S.A.: Company engaged in the production of biomass, processing biomass for the production and sale of biofuel, electricity, biochemicals and pharmachemicals, technological research and development, sale of sugarcane straw, bagasse and biomass.

GranBio - Intellectual Property Holdings LLC (formerly API - Intellectual Property Holdings – LLC): It holds all the patents and trade and technological secrets developed by GranAPI LLC and its subsidiaries.

GranBio Process Conversion Technologies LLC: Company holds the assets of Thomaston, a demonstration plant for existing biomass conversion technologies. This company has a lease agreement for its assets for AVAPCO LLC.

GranBio Process Conversion Technologies Holdco LLC: Nonoperational holding company with interest of 10% in GranBio Process Conversion Technologies LLC.

GranApi LLC: US-based non-operating holding company, controlling companies engaged in developing technologies to convert biomass into cellulosic ethanol, biochemicals and nanocellulose. GranApi LLC controls the following companies:

American Green + LLC: Company holding the sublicensing rights for technology owned by GranBio Intellectual Property Holdings LLC for converting biomass into cellulosic ethanol.

AVAPCO LLC: Company holding the sublicensing rights for technology owned by GranBio Intellectual Property Holdings LLC for converting biomass into biochemicals and nanocellulose. This company leases the Thomaston asset (a demonstration plant) from GranBio Process Conversion Technologies LLC to develop new technologies and render client services.

GranBio Services Inc.: A US-based company engaged in investing in companies strategically related to the Company's business plan. It is the holding company of the three companies below:

Alpena Biorefinery Inc. (formerly American Process Energy Recovery Inc): Company rendering water treatment services to the paper and pulp company Decorative Panels International, located in Alpena, MI, and the production and sale of molasses to other clients.

Alpena Prototype Bioref LLC: Nonoperational company, owner of the Alpena Biorefinery land.

Alternative Bioprod Inv. LLC: Nonoperational company.

Joint ventures

Companhia Energética de São Miguel dos Campos: Company dedicated to developing an integrated electricity and steam generation system running on biomass - cogeneration, electricity and steam supply and rendering services related to energy efficiency enhancement and generation. Most of the energy generated is to meet the demands of its shareholders and the surplus generation is fed into the electricity grid.

SGBio Renováveis S.A.: Company engaged in technological research, development and innovation for processing biomass and making chemicals from biomass. The Company ceased operating in August 2019, returning capital in local currency to its shareholders of R$ 26.

Note 5 shows the percentage of ownership interest in the direct subsidiaries, indirect subsidiaries and joint ventures.

3 Basis of preparation and presentation of the individual and consolidated financial statements

The Executive Board approved the issuance of the individual and consolidated financial statements on December 02, 2021.

The individual and consolidated financial statements for the year ended December 31, 2020, comprise the individual and consolidated financial statements of the Company, its subsidiaries and the Group's share of the profits and losses and net assets of a joint venture accounted for under the equity method.

Statement of compliance

The individual financial statements have been prepared in accordance with accounting practices adopted in Brazil ("BR GAAP"). The consolidated financial statements have been prepared in accordance with accounting practices adopted in Brazil ("BR GAAP") and in accordance with the International Financial Reporting Standards ("IFRS"), as issued by the International Accounting Standards Boards ("IASB"). .

Accounting practices adopted in Brazil include the policies established in Brazilian Corporation Law as well as the pronouncements, guidance and interpretations issued by the Accounting Pronouncements Committee (CPC), approved by the Brazilian Securities Commission (CVM) and the Federal Accounting Council (CFC).

International Financial Reporting Standards (IFRS) comprise the International Accounting Standards (IASs), the Interpretation of the International Financial Reporting Standards Committee (IFRIC) and Standing Interpretations Committee (SIC).

Details about the Group's main accounting policies can be seen in note 5.

Functional currency and reporting currency

The individual and consolidated financial statements are being presented in Brazilian Reais, which is the Company and its subsidiaries' functional currency, except the subsidiary GranBio LLC and its direct and indirect subsidiaries, whose functional currency is the US Dollar. All balances have been rounded to the nearest thousand, unless otherwise indicated.

Use of estimates and judgments

In preparing the individual and consolidated financial statements, Management has made judgments and used estimates that affect the application of the accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to the estimates are recognized prospectively.

a. Judgments

The information on judgments made in applying the accounting policies that have the most significant effects on the amounts recognized in the individual and consolidated financial statements is included in the following notes:

- **Note 1- Going concern**: Management evaluation of how the Group will produce and/or obtain capital to support operations over the next 12 months.
- **Note 5 – Consolidation basis**: determines whether the Company actually holds the control of an investee.
- **Note 6** – **Business combination**: fair value of consideration transferred and fair value of assets acquired and liabilities assumed;
- **Note 13 - Investments**: determines whether the Company has influence over an investee;
- **Note 14- Property, plant and equipment and Note 15 - Intangible assets** - impairment test, key assumptions underlying the recoverable amounts. For further information see note 16.
- **Note 17 – Loans, financing and debentures:** Compliance with the contractual terms of loans and financing;
- **Note 23 - Net revenue from good and services sold**: the Group recognizes revenue when it transfers the control of a product or service to the client.

b. Assumptions and estimation uncertainties

Information about assumptions and estimation uncertainties as at December 31, 2020, that have a significant risk of resulting in a material adjustment to the carrying amounts of assets and liabilities within the coming financial year are included in the following notes:

- **Note 6 – Business combination:** fair value of consideration transferred, fair value of assets acquired and liabilities assumed;

- **Note 10 - Inventory:** recoverable value of inventory based on market replacement cost, slow-moving products, expired products or products nearing the expiration date and products that do not meet quality standards, recorded as "Cost of products sold" and replacement cost in the market
- **Note 14 - Property, plant and equipment:** impairment test and key assumptions underlying recoverable amounts. For further information see note 16.
- **Note 15 – Intangible assets:** main assumptions underlying the recoverable amounts, including the recoverability of development costs, licenses, intellectual property and goodwill deriving from the business combination; for further information see note 16.

Fair value measurement

A number of the Company's accounting policies and disclosures require the measurement of fair values, for both financial and non-financial assets and liabilities; disclosures are shown in note 29.

When measuring the fair value of an asset or a liability, the Group used observable market data as far as possible. Fair values are categorized into different levels in a fair value hierarchy based on the inputs used in the valuation techniques as follows.

Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities.
Level 2: inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices).
Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs).

Further information about the assumptions adopted in measuring fair values is included in notes 6 and 16.

4 Basis of measurement

The individual and consolidated financial statements have been measured based on a historical cost basis.

5 Significant accounting policies

The accounting policies set out below have been applied consistently to all periods presented in these individual and consolidated financial statements.

a. Basis of consolidation

Ownership interest in investees

See below the ownership interest in the direct and indirect subsidiaries and joint ventures as at December 31, 2020 and December 31, 2019.

	Country	Ownership interest	
Direct subsidiaries		**2020**	**2019**
GranBio LLC	USA	100.00%	100.00%
BioCelere Agroindustrial Ltda.	Brazil	100.00%	99.99%

	Country	Ownership interest	
Direct subsidiaries		**2020**	**2019**
BioVertis Produção Agrícola Ltda.	Brazil	100.00%	99.99%
BioEdge Agroindustrial Ltda.	Brazil	100.00%	99.99%
BioPlant Agroindustrial Ltda.	Brazil	100.00%	99.99%
Indirect subsidiaries			
Bioflex Agroindustrial S.A.	Brazil	100.00%	99.99%
GranAPI LLC	USA	100.00%	100.00%
GranBio - Intellectual Property Holdings LLC (formerly API - Intellectual Property Holdings – LLC)	USA	97.00%	97.00%
GranBio Process Conversion Technologies LLC	USA	100.00%	100.00%
American Green + LLC	USA	100.00%	100.00%
AVAPCO LLC	USA	100.00%	100.00%
GranBio Services Inc. (formerly API – Intellectual Property Holdings – LLC.)	USA	96.10%	96.10%
GranBio Process Energy Recovery INC	USA	100.00%	100.00%
Alpena Prototype Bioref LLC	USA	100.00%	100.00%
Alternative Bioprod Inv. LLC	USA	100.00%	100.00%
Joint ventures			
Companhia Energética de São Miguel dos Campos – CESM	Brazil	50.00%	50.00%

(i) Subsidiaries

The Group controls an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of subsidiaries are included in the consolidated financial statements from the date on which control commences until the date on which control ceases.

The subsidiaries' financial information is recognized in the parent company's financial statements under the equity method.

(ii) Investments in investees accounted for under the equity method

The Group's investments in entities valued under the equity method consist of interest in associated companies and joint ventures.

Associates are those entities in which the Group has significant direct or indirect influence, but not control or joint control, over the financial and operating policies. A joint venture is an arrangement in which the Group has joint control, whereby the Company has rights to the net assets of the arrangement, rather than rights to its assets and obligations for its liabilities.

These investments are recognized initially at cost, which includes transaction costs. Subsequent to initial recognition, the financial statements include the Company's share of profit or loss for the year and other comprehensive income of investees accounted for under the equity method, until the date on which significant influence or joint control ceases.

Investments in subsidiaries are also accounted for under the equity method in the parent company's individual financial statements.

(iii) Transactions eliminated in consolidation

Intra-group balances and transactions and any unrealized income and expenses arising from intra-group transactions are eliminated in preparing the consolidated financial statements. Unrealized gains driving from transactions with investees recorded under the equity method are eliminated against the investment in proportion to the Group's interest in the investee. Unrealized losses are eliminated in the same way as unrealized gains, but only to the extent that there is no evidence of impairment.

(iv) Loss of control

When the Group loses control over a subsidiary, it derecognizes the assets and liabilities of the subsidiary, and any related NCI and other components of equity. Any gain or loss arising from the loss of control is recognized in profit or loss.

(v) Business combinations

Business combinations are accounted for using the acquisition method – i.e., when control is transferred to the Group. The acquisition date is the date on which the Group assumes control of the assets. The consideration transferred in the acquisition is generally measured at fair value, as are the identifiable net assets acquired. Any goodwill that arises is tested annually for impairment. Transaction costs are recognized in profit or loss as incurred.

The consideration transferred does not include amounts related to the settlement of pre-existing relationships. Such amounts are generally recognized in profit or loss.

Any contingent consideration is measured at fair value as at the acquisition date. If an obligation to pay contingent consideration that meets the definition of a financial instrument is classified as equity, then it is not remeasured and settlement is accounted for within equity. Otherwise, other contingent consideration is remeasured at fair value on each reporting date and subsequent changes in the fair value of the contingent consideration are recognized in profit or loss.

(iv) Noncontrolling interest

NCI are measured initially at their proportionate share of the acquiree’s identifiable net assets as at the date of acquisition. Changes in the Group’s interest in a subsidiary that do not result in a loss of control are accounted for as equity transactions.

b. Foreign currency

(i) Foreign-currency transactions

Foreign-currency transactions are translated into the respective functional currencies of Company's entities at exchange rates as at the dates of the transactions.

Cash assets and liabilities denominated in foreign currencies are translated into the functional currency at the exchange rate as at the reporting date. Non-cash assets and liabilities that are measured at fair value in a foreign currency are translated to the functional currency at the exchange rate when the fair value was determined. Non-monetary items that are measured based on historical cost in a foreign currency are translated at the exchange rates as at the date of the transaction. Foreign-currency differences arising from translation are generally recognized in profit or loss.

The investees' statements of profit or loss and cash flow, not in the parent company's functional currency, are translated to Brazilian currency at the average monthly exchange rate; assets and liabilities are translated at the closing rate and other equity items are translated at the historical rate.

Exchange rate gains from or losses on investments in subsidiaries and associated companies, not in the parent company's functional currency, are recorded in equity as accumulated translation adjustments, and are transferred to profit or loss upon divestment.

(vi) Overseas subsidiaries

The assets and liabilities of overseas subsidiaries, including goodwill and fair value adjustments arising on acquisition, are translated into Real at the exchange rates as at the reporting date. The income and expenses of overseas subsidiaries are translated into Real at the exchange rates as at the dates of the transactions.

Foreign currency differences arising from the translation of items into the reporting currency are recognized in other comprehensive income and accumulated in the asset and liability valuation adjustments reserve in equity. If the subsidiary is a non-wholly owned subsidiary, then the relevant proportion of the translation difference is allocated to non-controlling interest.

c. Revenue

Revenue is measured based on the consideration specified in a contract with the customer. The Group recognizes revenue when it transfers control over a good or service to a customer or when the sale/concession of the license takes place.

The following topics provide information about the nature and timing of the satisfaction of performance obligations in contracts with customers, including significant payment terms, and the related revenue recognition policies:

- Service fee income: revenue is recognized over time as the services are rendered. The stage of completion for determining the amount of revenue to recognize is assessed based on surveys of work performed. If the services under a single arrangement are rendered in different reporting periods, then the consideration is allocated based on their relative stand-alone selling prices. The stand-alone selling price is determined based on the list prices at which the Group sells the services in separate transactions. Invoices are issued monthly and are usually payable within 30 days.

- Resale of goods and Sugarcane and Energy Cane Vertix: revenue is recognized when the goods are delivered and have been accepted by customers at their premises. Customers obtain control of products when the goods are delivered to and have been accepted at their premises. This sales revenue is recognized when the performance obligation is fulfilled, i.e., when the promised product is physically transferred, and the consumer obtains control over this product.

- License revenue: the Company's license revenue is recognized at the specific point in time of the sale or its concession, since, at that time, the customer can determine how and when to use that license without needing the Group´s performance, meaning, that the Group will no longer carry out any activities that significantly affect the intellectual property of this license to which the customer has rights. Therefore, the license provides the right to use the Company's intellectual property as it exists when it is sold and granted and, for this reason, the revenue is recognized at that specific time of the sale and concession of the license, since its intellectual property does not change, and the customer obtains control at the time the license is granted.

- Revenue from collaboration agreements: revenue is deferred and recognized over time on a straight-line basis, according to the time periods determined in the contract between the parties. The price and means of collection are determined in specific negotiations with each client.

d. Employee benefits

Short-term employee benefits

Short-term employee benefits are expensed as personnel expenses as the related service is rendered. A liability is recognized for the amount expected to be paid if the Group has a present legal or constructive obligation to pay this amount as a result of past service rendered by the employee, and the obligation can be estimated reliably.

e. Financial revenue and expenses

The Company's financial revenue and expenses include:

- Interest rate gains and losses;
- Net gains from or losses on financial assets at fair value through profit and loss;
- Exchange rate gains from or losses on financial assets and liabilities;

Interest rate gains and losses are recognized using the effective interest rate method.

'Effective interest rate' means the rate that exactly discounts the estimated future cash payments or receipts through the expected lifetime of the financial instrument at:

- gross carrying amount of the financial asset; or
- at amortized cost of the financial liability.

When calculating interest rate gains or losses, the effective interest rate is charged on the gross carrying amount of the asset (when the asset is not impaired) or at the amortized cost of the liability. However, interest rate gains are calculated by applying the effective interest rate to the amortized cost of the financial asset suffering impairment after initial recognition. If the asset is no longer impaired, they are once again calculated based on the gross amount.

f. Inventory

Carried at the lower of average cost of purchase or production and net realizable value. The Group considers the following when determining its provision for inventory losses: slow turnover, expired products or products nearing the expiration date and products that do not meet quality standards. Inventory losses are recorded as “Cost of products sold” at replacement cost in the market. As per Note 10, the inventories are comprised of raw materials and consumables necessary for the production of 2G ethanol.

g. Property, plant and equipment

(i) Recognition and measurement

Items of property, plant and equipment are measured at the historical cost of acquisition or construction, which includes the capitalized loan costs, less accumulated depreciation and any impairment losses.

If parts of an item of property and equipment have different useful lives, then they are accounted for as separate items (major components) of property and equipment. Any gain from or loss on disposal of an item of property, plant and equipment (calculated as the difference between the net proceeds from disposal and the carrying amount of the property, plant and equipment) is recognized in other operating income/expenses in profit or loss.

(ii) Subsequent expenditure

Subsequent expenses are capitalized to the extent it is probable that the future benefits associated with these expenses shall be transferred to the Group. Ongoing repairs and maintenance are expensed as incurred in profit or loss.

(iii) Depreciation

Depreciation is calculated to amortize the cost of items of property, plant and equipment net of their estimated residual values using the straight-line method over their estimated useful lives, except for property, plant and equipment related to the operational plant that are depreciated based on the units-of-production method, i.e., its outputs projected for the next 40 years. Depreciation is recognized in profit or loss. The right-of-use asset is subsequently amortized using the straight-line method from the commencement date to the end of the lease term, unless the lease transfers ownership of the underlying asset to the Group by the end of the lease term or the cost of the right-of-use asset reflects that the Group will exercise a call option. In that case the right-of-use asset will be amortized over the useful life of the underlying asset. Land is not depreciated.

Items of property, plant and equipment are depreciated from the date they are installed and are available for use, or in the case of internally constructed assets, on the date construction is completed and the asset is available for use.

The estimated useful lives are (in years):

Property, plant and equipment	**2020 and 2019**
IT equipment	3 - 5
Vehicles	5
Furniture and fixtures	3 - 10
Lab machinery and equipment	2 - 10
Agricultural machinery and equipment	4 - 12
Improvements to rented property	25
Machinery, equipment and industrial facilities	2 - 40
Right-of-use asset	10
Buildings and constructions	2 – 60

The depreciation methods, useful lives and residual values are reviewed on each reporting date and adjusted if appropriate.

h. Intangible assets and goodwill

(i) Goodwill

Goodwill arising on the acquisition of subsidiaries is measured at cost less accumulated impairment losses.

(ii) Research and development

Expenditure on research activities is recognized in profit or loss as incurred.

Development expenditure is capitalized only if the expenditure can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable and the Group intends to and has sufficient resources to complete development and to use or sell the asset. Subsequent to initial recognition, development expenditure is measured at cost less accumulated amortization and any accumulated impairment losses.

(iii) Other intangible assets

Other intangible assets that are acquired by the Group and have finite useful lives are measured at cost less accumulated amortization and any accumulated impairment losses. Subsequent expenditure is capitalized only when it increases the future economic benefits embodied in the specific asset to which it relates. Amortization is calculated on the cost of an asset or other equivalent cost, minus the residual value.

(iv) Subsequent expenses

Subsequent expenses are capitalized only when they increase the future economic benefits incorporated into the specific asset to which they relate. All other expenses are recognized in the statement of profit or loss as incurred.

(v) Amortization

Intangible assets are amortized on a straight-line basis in profit or loss over their estimated useful lives, from the date that they are available for use.

The estimated useful lives are as follows (in years):

Intangible assets	2020 and 2019
Software	5
Technology licenses and intellectual property (*)	30

(*) Technology licenses and intellectual property are assets acquired in 2019 through a business combination.

(vi) Technology licenses, intellectual property and goodwill deriving from the business combination

The intangible assets are recorded at acquisition cost or fair value of the intangible assets acquired in a business combination, less accumulated amortization by the straight-line method, when applicable. These intangible assets are tested for impairment according to the accounting policy in note 5 (k.ii). Goodwill is not amortized.

i. Financial instruments

(i) Recognition and initial measurement

Trade receivables and issued debt securities are initially recognized on the date they originate.

All other financial assets and financial liabilities are initially recognized when the Group becomes a party to the contractual provisions of the instrument.

A financial asset (except for trade receivables without a significant financing component) or financial liability is initially measured at fair value. A trade receivable without a significant financing component is initially measured at the operation's price.

(ii) Classification and subsequent measurement

Upon initial recognition a financial asset is classified as measured at amortized cost or fair value through profit or loss - FVTPL.

Financial assets are not reclassified subsequently to initial recognition, unless the Group changes its business model to financial asset management. In this case all the affected financial assets are reclassified on the first day of the first period following the business model change.

A financial asset is measured at amortized cost if it meets both of the following conditions below and it is not designated as at FVTPL:

- it is held within a business model whose objective is to hold financial assets to collect contractual cash flows; and
- its contractual terms generate cash flows on specified dates that constitute solely payments of principal and interest ("SPPI") on the outstanding principal.

A debt instrument is measured at FVTPL.

Financial assets that are held for trading or are managed and whose performance is evaluated on a fair value basis are measured at FVTPL.

Financial assets

These assets are subsequently measured at amortized cost using the effective interest rate method. The amortized cost is reduced for impairment. Interest and exchange rate gains and losses and impairment are recognized in profit or loss. Any gain from or loss on derecognition is recognized in profit or loss.

Financial liabilities

Financial liabilities were classified as measured at amortized cost or at FVTPL. A financial liability is classified as at FVTPL if it is classified as held-for trading, is a derivative or is designated as such on initial recognition. Financial liabilities stated at FVTPL are measured at fair value and net income (loss), including interest, is recognized in profit or loss. Other financial liabilities are subsequently measured at amortized cost using the effective interest rate method. Interest rate losses and exchange rate gains and losses are recognized in profit or loss. Any gain from or loss on derecognition is also recognized in profit or loss.

(iii) Derecognition

Financial assets

The Group derecognizes a financial asset when the contractual rights to the cash flows from the asset expire, or when the Group transfers the rights to receive the contractual cash flows of a financial asset in a transaction where essentially all the risks and rewards of ownership of financial assets are transferred or in which the Group neither transfers nor substantially retains all the risks and rewards of ownership of the financial asset nor retains control over the financial asset.

Financial liabilities

The Group derecognizes a financial liability when its contractual obligations are withdrawn, canceled, or expire. The Group also derecognizes a financial liability when its terms are modified and the cash flows from the modified liability are substantially different, in which case a new financial liability based on the modified terms is recognized at fair value.

Upon derecognizing a financial liability, the difference between the former carrying amount and the consideration paid (including assets transferred that do not flow through cash or assumed liabilities) is recognized in profit or loss.

(iv) Offsetting

The financial assets and liabilities are offset and the net amount presented in the statement of financial position when, and only when, the Group has a legally enforceable right to offset the amounts and it intends either to settle them on a net basis or to realize the asset and settle the liability simultaneously.

j. Share capital

Common shares are classified as equity.

Incremental costs directly attributable to the issuance of common shares and share options are recognized as a deduction from equity. Effects of taxes related to the transaction costs are accounted for in accordance with CPC 32/IAS 12.

k. Impairment

(i) Non-derivative financial assets

Financial instruments and contractual assets

The Group recognizes provisions for expected credit losses on:

- financial assets measured at amortized cost; and
- contract assets.

The Group measures the provision for loss at an amount equal to the lifetime ECL. The provisions for losses on trade receivables and contract assets are measured at an amount equal to the expected credit loss for the instrument's entire life.

When determining whether the credit risk of a financial asset has increased significantly since initial recognition and when estimating the lifetime ECL, the Group considers reasonable and supportable information that is material and available without excessive cost or effort. This includes quantitative and qualitative information and analyses based on the Company's historical experience in credit evaluation and forward-looking information.

The Group assumes a financial asset's credit risk has risen substantially if it is more than 30 days overdue.

The Group considers a financial asset to be in default when:

- It is highly unlikely that the debtor will pay all of its credit obligations without resorting to actions such as enforcing the guarantee (if applicable) or
- the financial asset is more than 90 days overdue.

The Group considers that a debt security has a low credit risk when its credit risk rating is equivalent to the globally accepted definition of "investment grade".

Lifetime ECLs are ECLs that result from all possible default events over the expected life of a financial instrument.
12-month ECLs are ECLs that result from possible default events within the 12 months after the reporting date (or a shorter period, if the instrument's expected life is shorter than 12 months)
Expected credit losses could also be affected as result of the economic disruption caused by the Covid-19 pandemic.

The maximum period considered to estimate the expected credit loss is the maximum contractual period during which the Group is subject to credit risks.

Measuring expected credit losses

Expected credit losses are estimates weighted by the credit loss probability. Expected losses are measured at present value based on all cash deficiencies (i.e., the difference between the cash flows owed to the Group according to the contract and the cash flows it expects to receive). Expected credit losses are discounted by the financial asset's effective interest rate, when applicable.

Impaired financial assets

On each reporting date, the Group evaluates whether the financial assets recorded at amortized cost are credit impaired. A financial asset is 'impaired' when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred. Objective evidence that a financial asset is impaired includes the following observable data:

- significant financial difficulty of the issuer or borrower; violation of contractual clauses, such as default or being more than 90 days overdue;
- restructuring of an amount due to the Group on terms that the Group would not consider otherwise;
- the probability that the borrower will enter bankruptcy or other type of financial reorganization; or
- the disappearance of an active market for that financial asset because of financial difficulties.

Presenting the provision for expected credit losses in the statement of financial position

The provision for financial asset losses measured at amortized cost is deducted from the gross carrying amount of the assets, when applicable.

Write-off

The gross carrying amount of a financial asset is written off when the Group does not have a reasonable expectation to recover the financial asset in its entirety or in part. The Group expects no significant recovery from the amount written off. However, written-off financial assets can still be subject to credit enforcement to perform the Company procedures to recover the amounts due.

(ii) Non-financial assets

On each reporting date, the Group reviews the carrying amounts of its non-financial assets (except biological assets and inventory) for signs of impairment. If any such indication exists, the asset's recoverable amount is estimated. Goodwill is tested for impairment annually.

For impairment testing, assets are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows of other assets or CGUs (cash generating units). The goodwill acquired in a business combination is allocated to groups of CGUs that are expected to benefit from the synergies of the combination.

The recoverable value of an asset or cash generating unit is the higher of the value in-use and fair value minus selling expenses. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or the CGU.

An impairment loss is recognized if the carrying amount of an asset or CGU exceeds its recoverable amount.

Impairment losses are recognized in profit or loss They are allocated first to reduce the carrying amount of any goodwill allocated to the CGU (or group of CGUs), and then to reduce the carrying amounts of the other assets in the CGU (or group of CGUs) on a pro rata basis.

An impairment loss in respect of goodwill is not reversed. For other assets, an impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

l. Provisions

A provision is recognized when the Group has a legal or unofficial obligation as a result of past events, and it is probable that an outflow of economic benefits will be required to settle the obligation, which can be reliably estimated. When the Group expects a provision to be reimbursed, in part or full, for example as a result of an insurance contract, the reimbursement is recognized as a separate asset, but only when the reimbursement is a virtual certainty. Expenses related to any provision are presented in the statement of profit or loss net of any reimbursement. Any increase in the obligation over the course of time is recognized as a financial expense.

m. Statement of value added

The Group prepared the Statements of Value Added pursuant to technical pronouncement CPC 09 - Statement of value added. They are presented as an integral part of the financial statements in accordance with the BR GAAP applicable to publicly held companies, while under IFRS they represent additional information.

n. Government grants

The Group participates in the Economic Subsidy Program promoted by the Financiadoras de Estudos e Projetos ("FINEP"). The main objective of this program is to promote a significant increase in innovation activities and an increase in the competitiveness of companies and Brazilian economy.

This type of financial support from FINEP consists of the application of public non-reimbursable resources (which do not need to be returned) directly to companies, to share with them the costs and risks inherent to such activities.

The Group is currently using FINEP funding in the following projects: (a) Development of an engineering project, using precision agriculture techniques, for the construction of agricultural equipment that presents planting efficiency; (b) Structuring a transgenics program for plants with a greater amount of biomass and resistance to abiotic and/or biotic stresses, with an emphasis on prospecting genes and obtaining transgenic sugarcane plants.

Upon receipt of funds from FINEP, the Group recognizes the liability corresponding to its obligation to invest funds for the purposes of projects supported by FINEP. This liability has no financial charges and is maintained at its original historical value.

After the use of resources in the projects financed by FINEP and documentary evidence of them, FINEP will give its approval regarding the resources applied and the fulfillment of the contractual objectives and obligations by the Group. Only after that moment, the Company will recognize the corresponding gain in Other operating income (expenses), by appropriating the balance of the liability with FINEP, a moment that will represent the fulfillment of the Group´s obligations, therefore, having no amount to pay or reimburse FINEP.

6 Business combinations

Granbio LLC, a direct subsidiary of the Company, is primarily engaged in investing in companies strategically related to the Company’s business plan, by creating technologies for converting biomass into cellulose sugar for biochemicals and second-generation ethanol, in addition to developing nanocellulose for myriad industries. GranBio LLC is in the Biotech segment reporting of the Company. In recent years it acquired equity interest in companies in technology patent research and development in the strategic segments the Company operates in.

As at December 31, 2018, Granbio LLC had a 50% interest and joint control in GranAPI LLC, API-Intellectual Property Holdings LLC, American Process Conversion Technologies LLC and American Process Conversion Technologies Holdco LLC. In March 2019, GranBio LLC purchased all the remaining equity interest in these companies from TR LLC, with the exception of 3% of API – Intellectual Property Holdings LLC share capital, obtaining control of them all.

Lease payment

On March 13, 2019, the value of consideration paid to TR LLC in this business combination was US$ 51,900 thousand (R$ 194,028 thousand), as follows:

	US$ thousand	**R$ thousand**
Payments (i)	3,000	11,215
Accounts payable (i)	7,000	26,169
Right-of-use assets (ii)	3,400	12,711
Assignment of technological licenses (iii)	36,200	135,334
Other extra commercial services (iv)	2,300	8,599
Total	**51,900**	**194,028**

_(i)_ Payment of US$ 3,000 thousand (R$ 11,215) made on the date of the transaction, and 2 installments falling due in March 2020 and March 2021 which were recognized as accounts payable in the total amount of US$ 7,000 thousand (R$ 26,169 on the date of the transaction). The amount due in March 2020 was paid - see note 19. The outstanding amount as at December 31, 2020, is US$ 3,500 thousand or R$ 18,188.

_(ii)_ TR LLC, the seller, has the right to use assets of the Thomaston plant for 225 days in the period beginning April 01, 2019, through June 30, 2021. The Group has the right to acquire the days not used by TR LLC for US$ 15 thousand per day. For further information see note 19. The value assigned to this right was based on the Group's costs to repurchase all the days of use granted.

(iii) Assignment of 2 non-exclusive, worldwide, non-transferable, non-sublicensable licenses to TR LLC to use in 2 industrial projects, being one plant site in United States and one plant site in Europe. TR LLC's granted licenses are related to the existing technology portfolio, of the companies being sold, including biomass conversion into biofuels, biochemicals and/or nanocellulose. The value assigned to the license fee was based on the Joint Development Agreement between the Group and third parties, which established the license fee equivalent to US$ 18,100 thousand per license.

_(iv)_ Commercial fee equivalent to 10% of future licenses related to revenues commercialized by TR LLC to the BioForever project in Europe (GranBio LLC will receive the remaining 90% of the revenue stream). The commercial fee is the equivalent of US$ 1,800 thousand (10% of license fee) and US$ 500 thousand in other assets and contracts transferred to TR LLC.

Identifiable assets acquired and liabilities assumed

On the acquisition date, GranBio LLC determined the fair value of the assets acquired and liabilities assumed. The purchase price allocation was completed on March 13, 2019.

In the table below a summary of the assets acquired and liabilities assumed on a consolidated basis and the fair values of the acquired companies is presented:

Assets and liabilities	Fair value
Cash and cash equivalents	1,387
Accounts receivable	2,026
Inventories	90
Notes receivable (i)	54,044
Prepaid expenses	1,828
Other assets	1,716
Property, plant and equipment	33,927
Intangible assets	368,086
Assets acquired	**463,104**
Promissory notes payable	(78,512)
Deferred revenue	(17,224)
Other liabilities	(7,185)
Deferred taxes	(47,991)
Trade and accounts payable	(11,058)
Liabilities assumed	**(161,970)**
Identifiable assets, net value	**301,134**

(i) The US-based indirect subsidiaries, that were acquired, benefit from the "New Market Tax Credits" (NMTC) tax program to foment new markets and economic growth in low-income regions. As part of this structured transaction, the Group maintained the note receivable in the amount of US$ 14,456 thousand, equal to R$ 75,125 as at December 31, 2020 (R$ 57,885 as at December 31, 2019 – see note 12 – Other receivables), formalized through promissory notes.

Measurement of fair value

The Company prepared the fair-value appraisal of assets and liabilities based on models and projections created by external experts, and the following matters:

• Cash and cash equivalents, deferred revenue, accounts receivable, notes receivable and other operating assets and liabilities: consist of contractual amounts. There is no expected loss.

The valuation techniques used for measuring the fair value of material assets acquired were as follows:

Assets acquired	Description	Valuation technique
Property, plant and equipment	GranBio Process Conversion Technologies LLC controls Biorrefineria Thomaston located in Thomaston-GA. The Thomaston plant was designed to demonstrate the Green Power +, GreenBox and AVAP technologies. The plant is highly flexible for testing and able to convert from one to three tonnes of biomass a day, depending on density, into sugars and fermented products. The Thomaston biorefinery also has pre-commercial capacity for 150t/year of cellulose nanocrystals/cellulose nanofibers	Market comparison technique and cost technique: the valuation model considers market prices for similar items when they are available, and depreciated replacement cost when appropriate. Depreciated replacement cost reflects adjustments for physical deterioration as well as functional and economic obsolescence. The estimated useful lives are between 2 and 40 years.
Intangible assets	GranBio – Intellectual Property Holdings LLC (formerly API – Intellectual Property Holdings – LLC) holds 86 patents awarded/permitted globally (44 patents in the USA, 36 patents in Europe, 2 patents in Canada, 3 patents in South Africa, and 1 patent in China) and more than 100 patent applications submitted worldwide (USA, Europe, Brazil, Canada, China, Japan, India, Indonesia, Thailand, Malaysia, South Africa, Australia and Russia). The patents are related to the substantial biorefinery expertise and trade secrets, which combine front-end processes, specific processes and production technologies.	Relief-from-royalty relief and multi-period excess earnings method: the relief-from-royalty method considers the discounted estimated royalty payments that are expected to be avoided as a result of the patents being owned. The multi-period excess earnings method considers the present value of net cash flows anticipated from client relations, excluding any cash flows related to contributing assets. Useful life of 30 years.
Promissory notes	On December 30, 2014, the US-based indirect subsidiaries (AVAPCO LLC and GranBio Conversion Technologies LLC) entered into the "New Market Tax Credits" (NMTC) transaction to increase the funds available for expansion. As part of this transaction, AVAPCO LLC loaned US$ 14,456 thousand (R$ 57,885) to COCRF Investor 35 LLC (the Investment Fund).	The fair market value was calculated based on amortized cost. The asset is measured at the amount recognized at initial recognition minus principal repayments, plus or minus the cumulative amortization of any difference between that initial amount and the maturity amount.

Goodwill

Goodwill was calculated based on the difference between the consideration transferred and the fair value of the assets acquired. The goodwill recognized is not deductible for income and social contribution tax purposes. The goodwill from the acquisition was recognized on March 13, 2019, as follows:

	US$ thousand	**R$ thousand**
Consideration transferred	51,900	194,028
Noncontrolling interest (*)	1,500	5,607
Fair value of pre-existing interest	50,400	188,421
Total identifiable net assets at fair value	(80,553)	(301,134)
Goodwill	**23,247**	**86,922**

3% of API – Intellectual Property Holdings LLC held by non-controlling interest have been valued at fair market values of US$ 1,500 thousand (R$ 5,607 on the acquisition date), based on discounted cash flow.

Gain from business combination

As a result of gaining control, the Company remeasured, at fair value, its pre-existing interest in the businesses acquired and the assets transferred from Granbio LLC to TR LL. A gain of R$ 218,128 was recognized in profit or loss as a result. These amounts have been recorded under other income (note 26):

	US$	R$
Fair value of pre-existing interest	51,900	194,028
Less carrying amount of JVs	(35,711)	(133,498)
Noncontrolling interest	(1,500)	(5,607)
Fair value gain from pre-existing interest	14,689	54,923
Income from licensing (*)	38,500	143,933
Fluctuation in exchange rates	-	19,272
Total gain from business combination	**53,189**	**218,128**

(*) As a result of the transaction, the Company recognized income at the fair value of the 2 licenses assigned to TR LLC as part of the gain from the business combination.

If the acquisition had taken place on January 01, 2019, management estimates that GranBio LLC's consolidated revenue would have been R$ 13,272 and its consolidated loss would have been R$ 19,911. In the ten-month period ended December 31, 2019, the acquisition of equity interest in the direct invested companies led Granbio LLC to contribute revenue of R$ 10,499 and a loss of R$ 14,370 in the consolidated financial statements.

The impacts of the business combination on the consolidated financial statements are shown in notes 14 (Property, plant and equipment), 15 (Intangible assets) and 26 (Other operating income and expenses).

Deferred income tax

A deferred tax liability was also recorded amounting to US$ 12,783 thousand (R$ 48,127) for temporary differences that arose in respect of the recognition of identifiable assets and liabilities in the business combination.

7 Cash and cash equivalents

	Parent company		Consolidated	
	2020	**2019**	**2020**	**2019**
Cash and banks – checking account	-	2	205	1,062
Short-term investments	-	-	192	227
Total	**-**	**2**	**397**	**1,289**

Cash and cash equivalents include cash, bank deposits and short-term investments redeemable within up to 90 days from the investment date, highly liquid or convertible to a known cash amount and subject to immaterial change in value, which are recorded at cost plus income earned through the end of the reporting period and do not exceed their fair or realizable values. The funds are invested in capitalization bonds and their yield is calculated based on the interest rate charged on savings.

8 Short-term investments

	Parent company		**Consolidated**	
	2020	**2019**	**2020**	**2019**
Short-term investments	58,962	-	7,231	-
Total	**58,962**	**-**	**7,231**	**-**

As at December 31, 2020, short-term investments consist solely of:

(i) Short-term investment made by the Company in the last quarter of 2020 to purchase 39,229 quotas of debenture BFLE11 for R$ 50,897 from Itaú Unibanco S.A. (Itaú). The balance restated as at December 31, 2020, to reflect the financial yield, is R$ 51,731. This debenture was initially an exclusive operation between the subsidiary BioFlex Agroindustrial S.A. and Itaú, and the total amount was classified as a payable balance in note 17 Loans, financing and debentures. As a result of the investment made by the Company in the restated amount of R$ 51,731, part of BioFlex's debt under this debenture was transferred to the parent company itself. For the purpose of consolidation, this amount is therefore eliminated from the item short-term investments and loans, financing and debentures.

(ii) Short-term investment in the restated amount of R$ 7,231 as at December 31, 2020, originated by funds assigned by the shareholder GranInvestimentos S.A. and yielding 96.5% of the CDI rate. Investment made to create a reserve for repaying FINEP loans. The investment was redeemed in 2021 to repay the debt early. See details in note 33 Subsequent events.

9 Accounts receivable

	Consolidated	
	2020	**2019**
Accounts receivable	4,060	2,940
Total	**4,060**	**2,940**

Amounts recorded in this item denote the accounts receivable of the indirect subsidiaries GranBio American Process, Inc., Avapco and Intellectual Property Holdings, LLC from third parties for waste disposal and water treatment services rendered. In respect of the provision for expected credit losses, the Group's accounts receivable was not impaired by the Covid-19 pandemic.

10 Inventories

	Consolidated	
	2020	**2019**
Raw materials (i)	3,937	8,697
Consumables (ii)	2,748	973
Finished goods	1,568	-
Total	**8,253**	**9,670**

(i) The main raw materials are enzymes and straw required for the production of 2G ethanol. The Company and its subsidiaries have insurance contracts due to the risks involved.
(ii) Balance of various consumables used to produce 2G ethanol.

There was no inventory held by third parties as at December 31, 2020 (R$ 3,561 as at December 31, 2019, for 292,600 kg of enzymes).

Inventory risks:

• Inventory counts are carried out annually and when necessary, all differences between physical counts and accounting records are adjusted. However, in the last few years there have been no significant inventory adjustments.
• The risk of loss of value was recorded for straw due to the average cost of the inventories being higher than the replacement cost in the market, mentioned below.

Management valued the inventory based on its recoverable value as at December 31, 2020 and 2019, as follows:

Changes	**Provision for inventory**
Balances as at January 01, 2019	**(9,683)**
Provision for loss	(3,856)
Balances as at December 31, 2019	**(13,539)**
Provision for loss, net of use/reversal	(8,608)
Balances as at December 31, 2020	**(22,147)**

11 Related-party transactions

The Company has transactions with its direct subsidiaries, indirect subsidiaries, joint ventures, parent companies and associated companies, in order to provide funds to maintain its operations. Such operations do not incur interest or have a maturity date, as agreed by the parties.

Transactions between related parties refer to loans for cash supply and commercial transactions related to cost-sharing and other commercial transactions. As at December 31, 2020 and 2019, the balances break down as follows:

- Parent company

			2020		**2019**	
	Ratio		**Assets**	**Liabilities**	**Assets**	**Liabilities**
Loans						
BioVertis Produção Agrícola Ltda.	Subsidiary	(i)	-	-	21,637	-
BioCelere Agroindustrial Ltda.	Subsidiary	(i)	-	-	7,439	-
BioPlant Agroindustrial S.A.	Subsidiary	(i)	-	-	735	-
BioEdge Agroindustrial Ltda.	Subsidiary	(i)	-	-	109,815	-
API Brasil Engenharia e Serviços	Other	(iii)	-	-	895	-
Granbio LLC	Subsidiary	(v)	-	32,913	-	11,089
GranInvestimentos S.A.	Parent company	(ii)	-	122,240	-	120,494
Total			**-**	**155,153**	**140,521**	**131,583**
Trade receivables / payable						
Companhia Energética São Miguel dos Campos	Joint venture	(iii)	2,772	-	604	-
BioFlex Agroindustrial S.A.	Subsidiary	(iii)	-	-	5,594	-
Graal Participações S.A.	Indirect parent company	(iii)	-	-	6,575	-
GranEnergia Investimentos S.A.	Other	(iii)	-	-	1,295	-
MRO Serviços Logístico Ltda.	Other	(iii)	-	-	-	817

	Ratio		2020 Assets	2020 Liabilities	2019 Assets	2019 Liabilities
Total			**2,772**	**-**	**14,068**	**817**
Grand total			**2,772**	**155,153**	**154,589**	**132,400**
	Current		2,772	155,153	154,589	132,400
	Noncurrent		-	-	-	-

- Consolidated

	Ratio		2020 Assets	2020 Liabilities	2019 Assets	2019 Liabilities
Loans						
GranEnergia Investimentos S.A.	Other	(iii)	-	-	5,692	-
GranInvestimentos S.A.	Parent company	(ii)	-	122,240	-	104,042
Graal Participações S.A.	Indirect parent company	(iii)	-	-	6,686	-
MRO Serviços Logístico Ltda.	Other	(iii)	-	-	-	817
Total			**-**	**122,240**	**12,378**	**104,859**
Trade receivables / payable						
Companhia Energética São Miguel dos Campos	Joint venture	(iv)	83,466	-	61,776	-
Total			**83,466**	**-**	**61,776**	**-**
Grand total			**83,466**	**122,240**	**74,154**	**104,859**
	Current		-	122,240	12,378	104,859
	Noncurrent		83,466	-	61,776	-

Operations affecting profit or loss for the periods:

Parent company

	Ratio		2020	2019
Result				
Administrative expenses				
BioVertis Produção Agrícola Ltda.	Subsidiary	(iii)	1,235	690
BioCelere Agroindustrial Ltda.	Subsidiary	(iii)	258	144
BioFlex Agroindustrial S.A.	Subsidiary	(iii)	2,212	823
Companhia Energética São Miguel dos Campos	Joint venture	(iii)	1,816	957
Graal Participações S.A.	Other	(iii)	1,618	291
Grand total			**7,139**	**2,905**

Consolidated

	Ratio		2020	2019
Result				
Lease income				
Companhia Energética São Miguel dos Campos	Joint venture	(iv)	20,804	21,190
Administrative expenses				
Companhia Energética São Miguel dos Campos	Joint venture	(iii)	2,538	592
Graal Participações S.A.	Other	(iii)	1,730	
			4,268	**592**

(i) In 2019, this represents the values of the loans the Company extended to its subsidiaries. As at December 30, 2020, the receivable balances were recognized as investments as explained in note 13.

(ii) Cash received from the Company's subsidiary to supply cash for operating activities. A capital payment was made in FY 2020 on February 18, 2020, where the Extraordinary General Meeting approved a capital increase of R$ 77,662, through the issuance of 7,503,574 registered common shares, with no par value, for the unit issue price of R$ 10.35. The new shares were paid in as credits of GranInvestimentos S.A. held against the Company. The capital payment did not therefore affect the presentation of the statement of cash flows. See Note 21. Moreover, there were new loans received from GranInvestimentos, leaving a balance of R$ 122,241 payable as at December 31, 2020. No interest was charged on these loans.

(iii) Amounts receivable and other operations regarding the pass-through of corporate expenses by the Company and its direct and indirect subsidiaries and other related parties. The net reduction between assets and liabilities as at December 31, 2020, is directly related to the increase in the Company's investment in its subsidiaries, as per note 13. R$ 1,295 was received from GranEnergia Investimentos S.A. and the balance with Companhia Energética São Miguel dos Campos rose as a result of the debit note issuance.

(iv) Amounts receivable and other operations for the commercial lease of the boiler between the indirect subsidiaries Bioflex Agroindustrial S.A. and Companhia Energética São Miguel dos Campos - CESM. The amount will be received by generating cash from CESM's operations.

(v) Loan taken out from GranBio LLC with no interest or maturity.

Key management personnel compensation

	Parent company		Consolidated	
	2020	**2019**	**2020**	**2019**
Key management personnel compensation	(1,640)	(737)	(2,366)	(1,606)
Total	**(1,640)**	**(737)**	**(2,366)**	**(1,606)**

The amount paid as key management personnel compensation has been included in personal expenses disclosed in note 25.

12 Other receivables

The other notes receivable account breaks down as follows:

	Parent company		Consolidated	
	2020	**2019**	**2020**	**2019**
Accounts receivable from share issuance (a)	-	23,123	-	23,123
Promissory notes receivable (b)	-	-	75,125	57,885
Other receivables	-	-	1,836	2,451
Total	**-**	**23,123**	**76,961**	**83,459**

(a) A subrogated payment receipt was issued on February 17, 2020, in which the Company declared it had received R$ 23,123 from the shareholder GranInvestimentos S.A. debited from the funds already advanced by the shareholder and not returned by the Company, as payment of the balance of common shares issued by the Company and subscribed on April 30, 2013 by BNDES Participações S.A. and not paid in by it, thus fully operating the conventional subrogation of GranInvestimentos S.A. This change did not therefore affect the statement of cash flows.

(b) On December 30, 2014, the US-based indirect subsidiaries (AVAPCO LLC and GranBio Conversion Technologies LLC) entered into the "New Market Tax Credits" (NMTC) transaction to increase the funds available for the Group's expansion. As part of this transaction, AVAPCO LLC loaned US$ 14,457 thousand (R$ 75,125) to COCRF Investor 35 LLC (investment fund). The Investment Fund also received US$ 6,878 thousand in an equity investment from Capital One N.A. (Financial Investor). All funds received by the Investment Fund have been invested into three community development entities (CDEs) in transactions that qualify as a qualified entity investment under Internal Revenue Code Section 45C. AMCREF Fund XXIX (AMCREF), COCRF sub-CDE 27, LLC (COCRF), and DVCI CDE XXV, LLC (DVCI) received investments totaling up to US$ 21,335 thousand. In exchange for its investment and in addition to expected return of capital and interest, the Financial Investor will receive NMTC totaling 39% of the total amount invested in AMCREF, COCRF, and DVCI over seven years.

AMCREF, COCRF, and DVCI loaned US$ 20,510 thousand (R$ 106,584) to GranBio Conversion Technologies LLC described in note 19 (ii) to fund expansion and purchase the Thomaston Biorefinery from AVAPCO LLC for US$ 14,890 thousand in December 2014. AVAPCO LLC has subsequently entered into a lease agreement whereby it leases the Biorefinery from GranBio Conversion Technologies under a lease arrangement expiring in December 2034. This transaction takes place between subsidiaries and is eliminated in its entirety in the consolidated financial statements.

As part of this structured transaction, the subsidiary AVAPCO LLC has a receivable in the amount of US$ 14,457 thousand (R$ 75,125) as at December 31, 2020, formalized through promissory notes issued by COCRF Investor 35, LLC in relation to the New Market Tax Credit transaction. The terms of this note call for interest payments on a quarterly basis beginning March 2015 at 1.5% for a period of 7 years.

13 Investments

a. Breakdown of balances

	Parent company	
	2020	**2019**
Direct and indirect subsidiaries	959,172	761,042
Total	**959,172**	**761,042**

b.

c. Direct investments

Investees	**Equity (negative equity) 2020**	**Equity (negative equity) 2019**	**Profit/loss for the year 2020**	**Profit/loss for the year 2019**
BioEdge Agroindustrial Ltda.	422,709	388,585	(91,557)	(88,450)
BioVertis Produção Agrícola Ltda.	9,587	(10,950)	(6,887)	(18,164)
BioCelere Agroindustrial Ltda.	13,238	1,496	3,393	(1,454)
BioPlant Agroindustrial Ltda.	41	(727)	(36)	(63)
Granbio LLC	513,597	382,637	(34,711)	195,487
SGBio Renováveis S.A.	-	-	-	(1,066)

d. Changes in investments

- **Direct subsidiaries**

	Balances at 12/31/2018	**Write-off**	**Translation adjustment**	**Share of profit (loss) of investees under the equity method**	**Balances at 12/31/2019**	**Translation adjustment**	**Capital increase**		**Share of profit (loss) of investees under the equity method**	**Balances at 12/31/2020**
Subsidiaries										
BioEdge Agroindustrial Ltda.	478,270	-	-	(88,450)	389,820	-	124,446	(i)	(91,557)	422,709
BioVertis Produção Agrícola Ltda.	7,214	-	-	(18,164)	(10,950)	-	27,424	(i)	(6,887)	9,587
BioCelere Agroindustrial Ltda.	2,950	-	-	(1,454)	1,496	-	8,349	(i)	3,393	13,238
BioPlant Agroindustrial Ltda.	(664)	-	-	(63)	(727)	-	804	(i)	(36)	41
Granbio LLC	187,229	-	(1,313)	195,487	381,403	111,233	55,672	(ii)	(34,711)	513,597
Subtotal	**674,999**	**-**	**(1,313)**	**87,356**	**761,042**	**111,233**	**216,695**		**(129,798)**	**959,172**
Joint venture										
SGBio Renováveis S.A.	1,092	(26)	-	(1,066)	-	-	-		-	-
Subtotal	**1,092**	**(26)**	**-**	**(1,066)**	**-**	**-**	**-**		**-**	**-**
Total investments	**676,091**	**(26)**	**(1,313)**	**86,290**	**761,042**	**111,233**	**216,695**		**(129,798)**	**959,172**

(i) As at December 30, 2020, the Company decided to use the balances receivable recorded in related parties to make new investments in subsidiaries. R$ 15,803 of the total was invested in FY 2020, which impacted the Company's cash.

(ii) Financial contributions made in the investee based on its cash requirement.

e. Summary of direct subsidiaries' equity accounts

Direct subsidiaries as at December 31, 2020	**Assets**	**Liabilities**	**Equity**	**Profit or loss**
BioEdge Agroindustrial Ltda.	1,074,736	652,028	422,708	(91,557)
BioVertis Produção Agrícola Ltda.	22,581	12,994	9,587	(6,887)
BioCelere Agroindustrial Ltda.	13,804	566	13,238	3,393
BioPlant Agroindustrial Ltda.	93	52	41	(36)
Granbio LLC	757,146	239,173	517,974	(34,711)

Direct subsidiaries as at December 31, 2019	**Assets**	**Liabilities**	**Equity**	**Profit or loss**
BioEdge Agroindustrial Ltda.	1,178,841	790,256	388,585	(88,451)
BioVertis Produção Agrícola Ltda.	27,212	38,162	(10,950)	(18,164)
BioCelere Agroindustrial Ltda.	14,052	12,556	1,496	(1,454)
BioPlant Agroindustrial Ltda.	3	730	(727)	(63)
Granbio LLC	597,718	210,916	386,802	195,487

f. Summary of indirect subsidiaries' equity accounts

Indirect subsidiaries as at December 31, 2020	**Currency**	**Assets**	**Liabilities**	**Equity**	**Profit or loss**
BioFlex Agroindustrial S.A.	Real	1,049,462	632,958	416,505	(91,404)
AVAPCO LLC	US dollar	52,116	44,735	7,381	(3,401)
GranBio Services Inc.	US dollar	21,756	37,948	(16,192)	(1,386)
GranBio Conversion Technologies LLC	US dollar	5,097	20,492	(15,395)	(202)
Indirect subsidiaries as at December 31, 2019		**Assets**	**Liabilities**	**Equity**	**Profit or loss**
BioFlex Agroindustrial S.A.	Real	1,068,967	678,727	390,240	(102,946)
AVAPCO LLC	US dollar	38,463	27,681	10,782	4,930
GranBio Services Inc.	US dollar	26,692	41,497	(14,805)	(1,144)
GranBio Conversion Technologies LLC	US dollar	5,875	21,067	(15,192)	(8,135)

14 Property, plant and equipment

a. Breakdown of carrying amount

- Parent company

	2020			**2019**
	Cost	**Depreciation**	**Net**	**Net**
Improvements to rented property	-	-	-	67
Property, plant and equipment under construction	897	-	897	169
Furniture and fixtures	912	(850)	62	27
IT equipment	808	(808)	-	-
Administrative facilities	84	(82)	2	
Right of use	2,080	(11)	2,069	1,750
	4,781	**(1,751)**	**3,030**	**2,013**

- Consolidated

	2020			2019
	Cost	Depreciation	Net	Net
IT equipment	3,809	(3,794)	15	49
Vehicles	146	(146)	-	3
Furniture and fixtures	2,108	(1,832)	276	381
Lab machinery and equipment	7,997	(6,060)	1,937	2,641
Agricultural machinery and equipment	46,457	(29,555)	16,902	26,452
Improvements to rented property	10,410	(3,918)	6,492	47,269
Industrial machinery, equipment and facilities	1,028,757	(156,802)	871,955	871,913
Property, plant and equipment under construction	4,954	-	4,954	18,702
Right of use	2,081	(12)	2,069	1,750
Land	2,239	-	2,239	1,861
Buildings and constructions	44,654	(3,362)	41,292	2,765
Total	**1,153,612**	**(205,481)**	**948,131**	**973,786**

b. Changes in property, plant and equipment

- Parent company

	Balances as at 12/31/2019	Additions	Write-off	Balances as at 12/31/2020
Cost				
Improvements to rented property	1,786	-	(1,786)	-
Property, plant and equipment under construction	169	896	(169)	896
Furniture and fixtures	912	-	-	912
IT equipment	808	-	-	808
Administrative facilities	-	84	-	84
Right of use	2,625	2,081	(2,625)	2,081
Total	**6,300**	**3,061**	**(4,580)**	**4,781**
Depreciation				
Improvements to rented property	(1,719)	-	1,719	-
Furniture and fixtures	(885)	(33)	69	(849)
IT equipment	(808)	-	-	(808)
Administrative facilities	-	(82)	-	(82)
Right of use	(875)	(814)	1,677	(12)
Total	**(4,287)**	**(929)**	**3,465**	**(1,751)**
Total property, plant and equipment	**2,013**	**2,132**	**(1,115)**	**3,030**

- Parent company

	Balances as at 12/31/2018	Additions	Write-offs	Balances as at 12/31/2019
Cost				
Improvements to rented property	1,785	1	-	1,786
Property, plant and equipment under construction	20	149	-	169
Furniture and fixtures	918	-	(6)	912
IT equipment	863	-	(55)	808
Right of use	-	2,625	-	2,625
Total	**3,586**	**2,775**	**(61)**	**6,300**

Depreciation

	Balances as at 12/31/2018	Additions	Write-offs	Balances as at 12/31/2019
Improvements to rented property	(1,704)	(15)	-	(1,719)
Furniture and fixtures	(862)	(23)	-	(885)
IT equipment	(863)	-	55	(808)
Right of use	-	(875)	-	(875)
Total	**(3,429)**	**(913)**	**55**	**(4,287)**
Total property, plant and equipment	**157**	**1,862**	**(6)**	**2,013**

- Consolidated

	Balances as at 12/31/2019 (reclassified)	Addition	Write-off	Reclassif.	Fluctuation in exchange rates	Balances as at 12/31/2020
Cost						
IT equipment	3,492	-	-	-	317	3,809
Vehicles	146	-	-	-	-	146
Furniture and fixtures	2,084	-	-	-	24	2,108
Lab machinery and equipment	7,084	-	-	-	913	7,997
Agricultural machinery and equipment	53,537	-	(7,080)	-	-	46,457
Improvements to rented property	12,112	-	(1,702)	-	-	10,410
Industrial machinery, equipment and facilities	980,791	781	-	19,467	27,718	1,028,757
Property, plant and equipment under construction	20,256	4,328	(163)	(19,467)	-	4,954
Right of use	2,625	2,081	(2,625)	-	-	2,081
Land	1,767	-	-	-	472	2,239
Buildings and constructions	43,830	-	-	-	824	44,654
Total	**1,127,724**	**7,190**	**(11,570)**	**-**	**30,268**	**1,153,612**
Depreciation						
IT equipment	(3,443)	(34)	-	-	(317)	(3,794)
Vehicles	(143)	(3)	-	-	-	(146)
Furniture and fixtures	(1,712)	(96)	-	-	(24)	(1,832)
Lab machinery and equipment	(4,443)	(963)	-	-	(654)	(6,060)
Agricultural machinery and equipment	(27,641)	(5,318)	3,404	-	-	(29,555)
Improvements to rented property	(5,371)	(249)	1,702	-	-	(3,918)
Industrial machinery, equipment and facilities	(108,717)	(27,044)	-	-	(21,041)	(156,802)
Right of use	(875)	(814)	1,677	-	-	(12)
Buildings and constructions	(1,459)	(1,660)	-	-	(243)	(3,362)
Other	(134)	134	-	-	-	-
Total	**(153,938)**	**(36,047)**	**6,783**	**-**	**(22,279)**	**(205,481)**
Total of Property, plant and equipment	**973,786**	**(28,857)**	**(4,787)**	**-**	**7,989**	**948,131**

- Consolidated

	Balances as at 12/31/2018	Business combination (note 6)	Addition	Write-off	Transfers	Fluctuation in exchange rates	Balances as at 12/31/2019 (reclassified)
Cost							
IT equipment	2,455	1,018	-	(107)	126	-	3,492
Vehicles	180	26	-	(38)	(22)	-	146
Furniture and fixtures	1,967	78	-	(88)	127	-	2,084
Lab machinery and equipment	3,828	2,911	163	(565)	649	98	7,084
Agricultural machinery and equipment	50,724	-	-	-	2,813	-	53,537
Improvements to rented property	12,112	1,562	-	-	(1,655)	93	12,112
Industrial machinery, equipment and facilities	161,576	88,693	1,857	-	726,331	2,334	980,791
Property, plant and equipment under construction	760,263	-	20,052	-	(760,059)	-	20,256
Right of use	-	-	2,625	-	-	-	2,625
Land	134	1,598	-	-	(94)	129	1,767
Buildings and constructions	2,385	1,162	-	-	40,208	75	43,830
Plantation	10,913	-	-	(10,913)	-	-	-
Total	**1,006,537**	**97,048**	**24,697**	**(11,711)**	**8,424**	**2,729**	**1,127,724**
Depreciation							
IT equipment	(2,400)	(1,017)	(53)	107	(80)	-	(3,443)
Vehicles	(173)	(26)	(7)	38	25	-	(143)
Furniture and fixtures	(1,618)	(78)	(98)	88	(6)	-	(1,712)
Lab machinery and equipment	(2,242)	(1,697)	(333)	-	(171)	-	(4,443)
Agricultural machinery and equipment	(22,557)	-	(4,754)	-	(330)	-	(27,641)
Improvements to rented property	(5,122)	(411)	(316)	-	478	-	(5,371)
Industrial machinery, equipment and facilities	(28,172)	(59,658)	(13,283)	-	(7,604)	-	(108,717)
Right of use	-	-	(875)	-	-	-	(875)
Buildings and constructions	(528)	(234)	(95)	-	(602)	-	(1,459)
Plantation depletion	(4,332)	-	(6,087)	10,419	(134)	-	-
Total	**(67,144)**	**(63,121)**	**(25,901)**	**10,652**	**(8,424)**	**-**	**(153,938)**
Total of Property, plant and equipment	**939,393**	**33,927**	**(1,204)**	**(1,059)**	**-**	**2,729**	**973,786**

Property, plant and equipment under construction
Property, plant and equipment under construction represented the investment made to build the cellulosic ethanol production plant in São Miguel dos Campos - AL. These investments include the acquisition of equipment, assembly and installation services, construction and expenses to make the operation continuous and stable.

Following completion of the plant in 2019 and the operational start-up, the balance of property, plant and equipment under construction was reclassified to machinery and equipment and industrial facilities in property, plant and equipment.

In 2020 the balance of property, plant and equipment in progress consists of expenses to upgrade consumables processing and feeding machinery and upgrades to the dedusting system.

Guarantees
The property, plant and equipment pledged as guarantees as at December 31, 2020, amounts to R$ 261,812,911 (R$ 261,812,583 as at December 31, 2019). For further information see note 17 (c).

Capitalization of interest on property, plant and equipment under construction
The Company's indirect subsidiary BioFlex Agroindustrial S.A. did not capitalize interest on debts in FY 2020 (R$ 3,595 as at December 31, 2019). See note 17 item (b).

15 Intangible assets - Consolidated

	Software	Development	Licenses and intellectual property	Goodwill	Total
Balances as at December 31, 2018	**721**	**27,219**	**-**	**-**	**27,940**
Implementation of balance through business combination	-	-	368,086	86,922	455,008
Additions	-	2,102	-	-	2,102
Amortizations (a)	(376)	-	(11,407)	-	(11,783)
Fluctuation in exchange rates	-	-	25,130	6,925	32,055
Balances as at December 31, 2019	**345**	**29,321**	**381,809**	**93,847**	**505,322**
Additions	-	-	2,496	-	2,496
Amortizations (a)	(80)	-	(17,962)	-	(18,042)
Fluctuation in exchange rates	-	-	110,333	27,149	137,482
Balances as at December 31, 2020	**265**	**29,321**	**476,676**	**120,996**	**627,258**

(a) Amortization expenses were recognized in administrative and general expenses.

Development - investments made by the Company through its direct subsidiaries:

- Biovertis: development of Energy Cane Vertix, the raw material to be used in the production of biofuels and biochemicals in the amount of R$ 16,936 as at December 31, 2020 and 2019.
- Biocelere: development of genetically modified yeast to ferment cellulose sugar in the amount of R$ 12,385 as at December 31, 2020 and 2019.

Licenses and intellectual property ownership - Amounts denoting the development of intellectual property and licensing related to nanocellulose and biorefinery technology and trade and industrial secrets. The business combination (note 6) also resulted in R$ 368,086 being recognized as intangible assets identified by Management in the combination between Granbio LLC and the companies GranAPI LLC, API-Propriedade Intelectual Holdings LLC, American Process Conversion Technologies LLC and American Process Conversion Technologies Holdco LLC. The number of technology and intellectual property licenses was calculated based on the expected revenue generated by selling licenses to third parties, the existing commercial pipeline and prospects for growth in the number of projects for converting biomass into cellulosic ethanol, biochemicals and nanocellulose. For further information see Note 6.

Goodwill – Denotes expected future earnings generated for the companies GranAPI LLC, API-Propriety Intellectual Holdings LLC, American Process Conversion Technologies LLC and American Process Conversion Technologies Holdco LLC, as a result of their technology. Management used the relief-from-royalty method to estimate the fair value of these companies' technology. This method assumes that instead of paying for a property, a company is willing to pay to exploit the benefits related to this class of assets. This goodwill is not deductible for tax purposes. For further information see Note 6.

16 Impairment analysis

Property, plant and equipment and intangible assets that are subject to depreciation and amortization are therefore tested for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable.

Due to the limited operating history and tradition of investing in innovation, the Group periodically conducts impairment tests on its intangible assets and goodwill at BioFlex Agroindustrial S.A PPE and at GranBio LLC.

The recoverable amount was determined by using the discounted cash flows determined by Management based on budgets taking into account assumptions for each cash generating unit (CGU) budget assumptions and historical performance previously demonstrated.

The average weighted capital cost for discounting consisted of the alternative market funding base debt cost and CAPM methodology base equity cost, reflecting a reference beta for the renewable industry,

a. Property, plant and equipment

Regarding the impairment test for the subsidiary BioFlex Agroindustrial S.A., the Group used a long-term cash flow, which reflects the expected use of the recently implemented asset and the investments being made to achieve commercial capacity in an ongoing operation. The 2G ethanol prices were determined based on evidence from target markets. The operating expense projection was compiled based on the history of costs incurred adjusted to an industrial capacity level of use. As at December 31, 2020, the impairment tests conducted by the Group did not reveal the need for adjustments to the balances for the aforesaid projects. The realization of the assumptions made to prepare this test is conditioned to the start of commercial scale production of the 2G ethanol plant.

The Group made this test through the value-in-use method (discounted cash flow) and did not identify any losses, as shown below:

	Year	Value-in-use	Carrying amount	Value-in-use/Carrying amount
Bioflex Agroindustrial	2020	1,252,057	916,842	1.37
Bioflex Agroindustrial	2019	1,007,655	935,453	1.08

The discount rate used was 10.71% p.a. (7.28% as at December 31, 2019) in real terms. The inflation rate used for the projection was 3.25% (3.45% as at December 31, 2019). The discount rate was based on the weighted average cost of capital. Given the potential impact on the discount cash flow rate, the Group conducted a sensitivity analysis changing this variable whose cash flow can be seen in the table below:

	Year	+0.5% in the discount rate – Value-in-use
Bioflex Agroindustrial	2020	1,178,362
Bioflex Agroindustrial	2019	951,955

Others key assumptions are cellulosic ethanol price, biochemical price and nanocellulose demand, but the most important is the discount rate. The impairment tests conducted by the Group did not reveal the need for adjustments to the balances for the aforesaid projects.

b. Intangible assets and goodwill

As regards the impairment test for the subsidiary GranBio LLC, the Group used a 10-year cash flow plus perpetuity, which reflects the expected use of the recently implemented asset and the investments being made to achieve commercial capacity in an ongoing operation. The 2G ethanol prices were determined based on evidence from target markets. The Opex projection was compiled based on the history of costs incurred adjusted to an industrial capacity level of use.

The Group made this test through the value-in-use method (discounted cash flow) and did not identify any losses, as shown below:

		Value-in-use	Carrying amount	Value-in-use/Carrying amount
GranBio LLC	2020	721,107	597,672	1.21
GranBio LLC	2019	489,396	439,960	1.11

The average discount rate used was 19.16% p.a. (9.99% as at December 31, 2019) in real terms.

Given the potential impact on the discount cash flow rate, the Group conducted a sensitivity analysis changing this variable whose cash flow is shown in the table below:

		+1% in the discount rate – Value-in-use
GranBio LLC	2020	613,784
GranBio LLC	2019	459,515

Others key assumptions are cellulosic ethanol price, biochemical price and nanocellulose demand, but the most important is the discount rate. The impairment tests conducted by the Group did not reveal the need for adjustments to the balances for the aforesaid projects.

17 Loans, financing and debentures

				Parent company		Consolidated	
Type	**Index**	**Charges**	**Maturity**	**12/31/2020**	**12/31/2019**	**12/31/2020**	**12/31/2019**
FINEP - Financing	Fixed	4.00%	May/24	6,747	6,924	6,747	6,924
FINEP - Financing	TJLP	+ 3.70%	Feb/29	133,155	110,848	133,154	110,849
Working capital	CDI	+10.00%	Aug/21	15,095	-	15,095	-
BNDES - Financing	IPCA	+4.27%	May/23	-	-	118,778	111,113
BNDES - Financing	TJLP	+ 4.12%	May/25	-	-	185,023	166,953
BNDES - Loan	SELIC	+ 7.78%	Mar/22	-	-	1.779	1,550
BNB - Financing	Fixed	5.77%	Sep/27	-	-	128,959	123,542
Debentures	CDI	+1.00%	Jan/21	-	-	53,776	101,654
				154,997	**117,772**	**643,311**	**622,585**
/		**Current**		**16,357**	**29,324**	**164,373**	**245,648**
		Noncurrent		**138,640**	**88,448**	**478,938**	**376,937**

The short-term debt has exerted pressure on the Group's cash flow and led it to incur a negative net working capital. Management concluded renegotiations with the financial institutions to lengthen its debt profile in order to ease up its operating cash flow. See note 1.

Financing

Financing was obtained from BNDES and BNB in order to fund the construction of the industrial cellulose ethanol production plant and to acquire agricultural machinery to harvest the raw material.

Financing obtained from FINEP consists of contracts funding the research and development projects for biomass (Energy Cane Vertix) and yeast, in addition to technologies for converting biomass into biochemicals and biofuel.

Debentures

In March 2015, the indirect subsidiary Bioflex Agroindustrial S/A made its 1st issuance of ordinary debentures through a private deed, entailing the issuance of 80 (eighty) secured registered ordinary nonconvertible debentures for a restricted public distribution, without the issuance of pledges or certificates, in a single series for a unit value of R$ 1,000, with the subscription amounting to R$ 80,000.

The debentures' yield rate is 100% of the accumulated fluctuation in the average daily DI rates (interbank deposits or "CDI"), plus a surcharge, for the periods.

The debentures were issued by the indirect subsidiary BioFlex Agroindustrial S.A., with Banco Itaú as the debenture holder, in order to refinance debt and bolster cash.

The nominal value of the debentures matured 3 years after distribution (March 17, 2018). The 6th amendment to the issuance of ordinary debentures extended the maturity term to 4 years and 9 months, as from the issuance date, accordingly maturing on September 19, 2020, with payment of principal and interest at maturity. Following renegotiation of the debt with the maturity initially extended to October 19, 2020.

By way of the minutes from the General Debenture holders Meeting, on December 03, 2020, a new extension was made, with the maturity negotiated to January 08, 2021, which in turn has also been extended, as stated in note 33 Subsequent Events.

a. Debt amortization schedule

See below the contractual maturities of financial liabilities:

	Parent company		Consolidated	
	12/31/2020	12/31/2019	12/31/2020	12/31/2019
1 year	16,356	29,324	164,373	245,648
2 years	4,127	20,023	91,659	71,829
3 years	8,497	20,023	89,925	71,875
4 years onwards	126,017	48,402	297,354	233,233
	154,997	**117,772**	**643,311**	**622,585**

b. Reconciliation of equity changes with cash flows deriving from financing activities

	Parent company	Consolidated
Balances as at January 01, 2019	**114,428**	**593,669**
Amortization of loans and financing (principal)	(573)	(9,716)
Provision for interest on loans, financing and debentures	10,902	58,820
Capitalized interest on property and equipment	-	3,595
Amortization of loans and financing (interest)	(6,985)	(23,783)
Balances as at December 31, 2019	**117,772**	**622,585**
Amortization of loans and financing (principal)	(509)	(2,282)
Provision for interest on loans, financing and debentures	23,319	61,683
Amortization of loans and financing (interest)	(585)	(2,778)
Proceeds from loans and financing	15,000	15,000
Debenture buyback (i)	-	(50,897)
Balances as at December 31, 2020	**154,997**	**643,311**

(i) Between October 28, 2020, and December 17, 2020, the Company purchased 39,229 quotas out of a total of 80,000 quotas in the debenture BFLE11 of the subsidiary Bioflex Agroindustrial S.A., totaling R$ 50,897, as stated in note 8.

c. Guarantees

The Company's debts are secured by bank guarantee and corporate endorsement and the subsidiaries' debts by bank guarantees, corporate endorsements and real guarantees. The real guarantees are imposed on property, plant and equipment by BNDES and FINEP. Both institutions have a mortgage on the industrial assets of the subsidiary BioFlex, level 1 and 2 mortgages respectively, and FINEP also has a guarantee over agricultural equipment. See the values of property, plant and equipment submitted as guarantees in note 14.

d. Covenants

The Group has loans and financing amounting to R$ 154,996 (R$ 117,772 as at December 31, 2019) and R$ 643,311 (R$ 622,585 as at December 31, 2019) recorded in the individual and consolidated financial statements, respectively, all due in installments through September 2027.

The loans and financing contain non-financial operating covenants establishing a range of obligations, listed below:

- Compliance with environmental obligations and legislation, the biosafety quality certificate (CQB) and the Gene Pool Management Council (CGEN).
- Submit federal, state and municipal tax debt clearance certificates.
- Have not incurred protests for indisputable debts.
- Pausing of operating activities.
- Corporate and equity restructuring.

The Company also engaged independent legal advisors to corroborate management's interpretation that no contract subject to a covenant forbidding protests of indisputable debts should be reclassified to current liabilities. Both opinions conclude there are no legal or contractual grounds for early maturity.

18 Trade payables

	Parent company		Consolidated	
	2020	**2019**	**2020**	**2019**
Trade payables	4,804	1,446	49,716	42,154
Total	**4,804**	**1,446**	**49,716**	**42,154**

Trade payables are mainly due to the purchase of raw materials for the 2G ethanol production process and independent auditing and consultancy services acquired.

19 Accounts payable – Consolidated

	Consolidated	
	2020	**2019**
Acquisition of ownership interest (i)	18,188	28,215
Promissory notes (ii)	106,584	82,670
Co-obligations payable	12,337	5,115
Other accounts payable	4,948	16,151
	142,057	**132,151**
Current	34,922	29,880
Noncurrent	107,135	102,271

(i) Denotes the acquisition of equity interest through the direct subsidiary Granbio LLC, as per note 6. The amount payable is US$ 7,000 thousand as at December 31, 2019, to be settled in two equal annual payments of US$ 3,500 thousand, the first maturing in March 2020 and the second in March 2021, both settled. As at December 31, 2020, the residual value is US$ 3,500 thousand or R$ 18,188.

(ii) By way of the subsidiary Granbio LLC, structured "New Market Tax Credit" operations were performed (note 12.b) to expand and purchase Thomaston Biorefinery, located in Georgia - USA, in which the funds AMCREF, DVCI and COCRF loaned US$ 20,510 thousand to GranBio Conversion Technologies LLC. These contributions were made as long-term promissory notes. As mentioned in note 12, this structured transaction was realized between subsidiaries directly and indirectly held by Granbio LLC. The amount of US$ 20,510 thousand or R$ 106,584 was still payable to the investment funds as at December 31, 2020. The debt is scheduled to be amortized over 13 repayments maturing from 2022 to 2034.

See below the schedule by year of maturity for accounts payable classified in non-current liabilities:

	2020	2019
1 to 2 years	8,749	10,145
2 to 3 years	8,199	6,746
3 to 4 years	8,199	6,746
4 years onwards	81,988	78,634
	107,135	**102,271**

20 Deferred revenue

	Consolidated	
	2020	**2019**
Collaboration agreement (i)	18,188	-
Right of use (ii)	4,028	4,360
	22,216	**4,360**
Current	10,264	-
Noncurrent	11,952	4,360

(i) On July 31, 2020, the Group established a strategic alliance with NextChem, a subsidiary of the Italian engineering group Maire Tecnimont with a worldwide presence in renewable energy. This is a 10-year partnership and has the following values and premises:

- US$ 4,000 thousand received after signing the contract;
- US$ 4,000 thousand will be received after the technology license has been sold;
- US$ 4,000 thousand will be received after the plant starts production for the sale of the first license or the sale of the second technology license;
- US$ 3,000 thousand will be received in engineering services to optimize the technology and develop a "process design package".

The first tranche of US$ 4,000 thousand was received in August 2020 and recognized as deferred revenue, which will be amortized over 10 years, in accordance with the contract. The contract has a total value of US$ 15,000 thousand, with residual tranches of US$ 11,000 thousand, of which US$ 8 million will be received in cash and US$ 3,000 thousand in services rendered by Nextchem. As at December 31, 2020, the carrying amount is US$ 3,500 thousand (R$ 18,188), because US$ 500 thousand (R$ 2,705) was recognized as revenue in the period. See note 23.

(ii) This denotes the recognition of the right to use the Thomaston plant, awarded under the terms of the equity interest acquisition agreement for the direct subsidiary Granbio LLC and the business combination in March 2019. The initial amount was US$ 3,400 thousand (R$ 12,711). The amount as at December 31, 2020, is US$ 775 thousand (R$ 4,028). The recognized right-of-use is recorded based on the period embraced by this access agreement, as per note 6.

21 Government grants

	Consolidated	
	12/31/2020	**12/31/2019**
Government grants	-	4,797
Total	**-**	**4,797**

FINEP's incentives using non-reimbursable public resources granted to be used in innovation activities (nanotechnology, biotechnology, information and communication technologies, sustainable construction and industrial sanitation) to increase the Group's competitiveness.

In August 2020 the incentives ended, and FINEP approved the allocation of the resources spent. The amount was recognized as other operating income and is stated in note 26.

22 Equity

a. Share capital

The ownership structure is as follows:

	December 31, 2020		
Shareholders	**Capital - R$**	**Number of shares**	**Interest**
GranInvestimentos S/A	377,662	93,038,165	86%
BNDES Participações S/A	600,000	15,094,340	14%
Total	**977,662**	**108,132,505**	**100%**

	December 31, 2019		
Shareholders	**Capital - R$**	**Number of shares**	**Interest**
GranInvestimentos S/A	300,000	85,534,591	85%
BNDES Participações S/A	600,000	15,094,340	15%
Total	**900,000**	**100,628,931**	**100%**

At a meeting held on February 18, 2020, the Extraordinary General Meeting approved a capital increase of R$ 77,662, through the issuance of 7,503,574 registered common shares, with no par value, for the unit issue price of R$ 10.35. The shares were paid in as credits held against the Company.

At the Extraordinary General Meeting a meeting held on December 30, 2019, approved the capital increase of R$ 249,869, through the issuance of 24,141,935 registered common shares, with no par value, for the unit issue price of R$ 10.35. The new shares could be paid up with credits held against the Company or paid in local currency, however, in the Minutes of the Extraordinary General Meeting, held on February 18, 2020, the shareholders approved the cancellation of the future subscription of share capital that had been decided on that date, except for the increase in the amount of R$ 77,662 commented on in the previous paragraph.

b. Asset and liability valuation adjustments

Asset and liability valuation adjustments include accumulated adjustments for foreign-currency differences deriving from the translation of financial statements for foreign operations. In FY 2020 the translation gain of R$ 111,233 was recognized. The balance of the item as at December 31, 2020, is R$ 193,011.

c. Capital reserve

In a Shareholders' Agreement signed on April 30, 2013, between BNDESPAR and GranInvestimentos S.A. (Shareholders), it was stipulated that the shares were initially issued at R$ 39.75 each. The capital contributions after the signing of this Agreement have the share price adjusted by the Broad Consumer Prices Index (IPCA). The variation in the share price between the date of the Shareholders' Agreement until the date of the effective receipt of the capital contribution, is multiplied by the total number of paid-in shares, and this variation is recorded as a Capital Reserve.

As at December 31, 2020 and 2019, the total capital reserve was R$ 108,175.

23 Revenue from goods sold and services rendered

	2020	2019
Revenue from collaboration agreements (i)	2,705	-
Revenue from services rendered (ii)	10,810	10,499
Resale of goods (ii)	7,695	3,988
Revenue	**21,210**	**14,487**
Revenue from lease of equipment (iv)	20,804	21,190
Other revenue	**20,804**	**21,190**
Total gross revenue	**42,014**	**35,677**
Sales taxes	(2,039)	(2,140)
Revenue from goods and services sold	**39,975**	**33,537**

(i) Revenue of US$ 500 thousand (R$ 2,705) due to the recognition of deferred revenue under the Collaboration agreement with Nextchem, as detailed in note 20.
(ii) Operational revenue of the indirect subsidiaries GranBio Process Energy Recovery, Inc., Bio Plus and Avapco resulting from waste elimination and water treatment services rendered by using proprietary technology.
(iii) Operating revenue of the indirect subsidiaries BioFlex Agroindustrial S.A. and BioVertis Produção Agrícola Ltda. due to reselling sugarcane straw to CESM, domestic sales of cellulosic ethanol and sugarcane saplings to other clients outside GranBio group.
(iv) Operating revenue of the indirect subsidiary BioFlex Agroindustrial S.A. due to leasing electricity cogeneration assets, as per the contract signed with CESM.

For further information about operating revenue see Note 29 - Segment Reporting.

24 Cost of goods sold and services rendered

	2020	2019
Cost of services rendered (i)	(21,165)	(17,339)
Cost of goods sold (ii)	(57,333)	(44,353)
Total	**(78,498)**	**(61,692)**

(i) Operational cost of the indirect subsidiaries GranBio Process Energy Recovery, Inc. and Avapco resulting from waste elimination and water treatment services rendered and Bioflex’s lease costs.
(ii) The amounts denote the production costs of the indirect subsidiary BioFlex Agroindustrial S.A. due to reselling sugarcane straw to CESM and domestic sales of cellulose ethanol. As at December 31, 2020, the depreciation cost allocated to cost of goods sold was R$ 32,362 (R$ 22,818 as at December 31, 2019).

25 Administrative and general expenses

	Parent company		Consolidated	
	2020	2019	2020	2029
Personnel expenses	(1,466)	(1,439)	(11,481)	(13,073)
Services rendered (iii)	(11,528)	(4,739)	(29,516)	(17,036)
Occupation expenses	(778)	(445)	(1,880)	(5,503)
Vehicle expenses	(3)	(5)	(393)	(599)
Insurance	(174)	(127)	(4,069)	(1,893)
Travel	(147)	(944)	(606)	(1,551)
Depreciation and amortization (ii)	(851)	(1,058)	(20,747)	(14,866)
Selling expenses	(433)	(66)	(471)	(148)
General expenses (iv)	(259)	(422)	(4,364)	(10,951)
Marine operations	-	-	-	(359)
Taxes and fees	(1,048)	(195)	(2,874)	(1,254)
Recovery of expenses (i)	7,145	4,523	3,470	3,772
Total	**(9,542)**	**(4,917)**	**(72,931)**	**(63,461)**

(i) Expenses of subsidiaries recovered, through transfer of corporate expenses related to the management of the Company.

(ii) Depreciation of other assets such as furniture, vehicles and IT equipment are recognized as a general and administrative expense. In the consolidated financial statements, the depreciation expense as at December 31, 2020, was R$ 2,706 (R$ 3,083 as at December 31, 2019) and the amortization expense for intangible assets as at December 31, 2020, was R$ 18,042 (R$ 11,783 as at December 31, 2019).

(iii) Denotes expenses on third-party services rendered, such as audit, tax and legal services.

(iv) General expenses on maintenance, mail, fuel, materials for use and consumption and security materials.

26 Other operating income

	Consolidated	
	2020	2019
Gain from business combination (note 6) (i)	-	218,128
Recognition of right-of-use related to access (note 6) (ii)	7,734	4,487
Other revenues from government grants (note 21)	4,797	-
Revenue from sale of biological assets (iii)	-	550
Other operating income	-	2,607
Total other revenue	12,531	225,772
Write-off of biological assets and plantations (iii)	-	(12,302)
Other operating income (expenses)	(97)	-
Total other expenses	(97)	(12,302)
Total	**12,434**	**213,470**

(i) Amount related to the gain from the business combination. See note 6.

(ii) Recognition of right of use (lease) of the Thomaston plant due to the control acquisition and the business combination in March 2019. The recognized right to use is recorded based on the period embraced by this agreement.

(iii) The amount of R$ 550 consists of revenue from the sale of biological assets on August 08, 2019. The amount of R$ 12,302 consists of the write-off of the cost of biological assets sold.

27 Financial expenses, net

	Parent company		Consolidated	
Financial expenses	**2020**	**2019**	**2020**	**2019**
Bank expenses	(52)	(4)	(88)	(102)
IOF	(152)	(49)	(153)	(49)
Interest rate losses (i)	(382)	(216)	(10,737)	(793)
Interest on loans, financing and debentures	(23,651)	(10,902)	(61,683)	(58,820)
Exchange rate losses	(6,118)	(12)	(15,646)	(22)
	(30,355)	**(11,183)**	**(88,307)**	**(59,786)**
Financial revenue				
Interest rate gains	-	-	1,118	6
Financial discounts obtained	64	47	1,611	1,812
Return on investments	893	159	18	308
Exchange rate gains	-	-	9,602	-
	957	**206**	**12,349**	**2,126**
Financial expenses, net	**(29,398)**	**(10,977)**	**(75,958)**	**(57,660)**

(i) Interest mainly due to financial expenses on loan guarantees obtained from financial institutions and interest and fines on late payments to suppliers and taxes.

28 Accumulated tax losses

a. Amounts recognized in profit or loss for the period - Consolidated

	2020	2019
Current income and social contribution tax expenses		
Current expenses	-	-
Total	**-**	**-**
Deferred income and social contribution tax expenses		
Temporary difference:		
Realization through amortization of intangible assets	4,814	1,556
	4,814	**1,556**

b. Deferred tax assets not recognized - Consolidated

	2020	2019
Profit (loss) before income and social contribution taxes	**(174,978)**	**77,009**
North American Companies [H]	(34,711)	195,487
Brazilian Companies [A]	(140,267)	(118,478)
Combined tax rate [B]	34%	34%

	2020	2019
Income and social contribution taxes calculated at statutory rates in Brazil [A]*[B]=[C]	**(47,691)**	**(40,283)**
Additions: [D]	**2,927**	**1,311**
Provision for inventory losses	**2,927**	**1,311**
Exclusions: [E]	**-**	**(4,357)**
Reversal of provision for inventory loss	-	-
Share of profit (loss) of investees under the equity method	-	(4,357)
Deferred income and social contribution tax assets not recognized [C] + [D] + [E] = [F]	**(44,764)**	**(43,329)**
Effective rate - Brazilian Companies [F] / [A]	31.91%	36.57%
Accumulated tax loss (opening balance)	(520,600)	(393,163)
Deferred income and social contribution tax assets not recognized - opening balance [G]	(177,004)	(133,675)
Deferred income and social contribution tax assets not recognized in Brazil [F] + [G]	**(221,768)**	**(177,004)**
Profit (loss) before income and social contribution taxes - North American Companies [H]	**(34,711)**	**195,487**
Combined tax rate	21%	21%
Income and social contribution taxes calculated at statutory rates [I]	**(7,289)**	**41,052**
Exclusions: [J]	**-**	**(45,807)**
Business combination effects	-	(45,807)
Income and social contribution taxes [I] + [J] = [K]	**(7,289)**	**(4,755)**
Effective rate - North American Companies [K] / [H]	21%	(2.43%)
Accumulated tax loss (opening balance)	(68,910)	(46,269)
Deferred income and social contribution tax assets not recognized - opening balance [L]	(14,471)	(9,716)
Deferred income and social contribution tax assets not recognized in the US - closing balance [K] + [L]	**(21,760)**	**(14,471)**

The Group did not generate taxable profit in previous years and, therefore, there is increased doubt about whether future taxable profit will be available in the foreseeable future to realize deferred tax assets. As a result, deferred tax assets were not recognized as at December 31, 2020.

For the Brazilian companies, accumulated tax losses and the negative basis of social contribution never expire, but can only be offset against up to 30% of annual taxable earnings.

For North American entities, tax losses accumulated before December 31, 2017, can be used in 20 years and there is no limit on taxable profit for the use of these losses. Tax losses generated after December 31, 2017, can be used indefinitely and can be used to offset only 80% of taxable income for the current year.

Tax returns for all companies are subject to tax inspections and reviews by the tax authorities for varying periods. As a result of these inspections and reviews, questions may arise about the methodologies, criteria and interpretations of the legislation by the authorities and, therefore, change the amounts recognized by the Group in the financial statements and/or result in judicial questions.

c. Changes in deferred tax balances

	Consolidated
Opening net balance as at January 01, 2019	-
Deferred tax liability – business combination (note 6)	47,991
Realization through amortization of intangible assets	(3,136)
Exchange rate gains from translating deferred taxes from the functional currency into the reporting currency	3,897
Closing net balance as at December 31, 2019	**48,752**
Realization through amortization of intangible assets	(4,817)
Exchange rate gains from translating deferred taxes from the functional currency into the reporting currency	14,068
Closing net balance as at December 31, 2020	**58,003**

29 Financial instruments and risk management

Operations with financial instruments are fully recognized in the accounts and restricted to cash and cash equivalents, accounts receivable, loans and financing, and other accounts receivable and payable from related parties, loans, financing and debentures, trade payable and other accounts payable.

The Group and its direct and indirect subsidiaries do not invest in derivatives or any other risky assets on a speculative basis.

The Group and its direct and indirect subsidiaries assessed such financial assets and liabilities with respect to market value based on available information and appropriate assessment methodologies. However, the interpretation of market data and selection of assessment methods requires considerable judgment and estimates to calculate the most appropriate realizable value. As a result, the estimates do not necessarily indicate the values that could be realized in the current market.

The activities of the Company and its direct and indirect subsidiaries expose them to various financial risks: credit risk, liquidity risk and market risk (including interest rate risk), as described below:

a. Credit risk

Credit risk is the risk of financial loss to the Company if a customer or counterparty to a financial instrument fails to meet its contractual obligations. This risk is primarily posed by trade receivables.

The carrying amount of financial assets represents the maximum credit exposure.

The Company has a credit policy whose purpose is to set procedures for granting loans in business transactions that are in line with the required levels of quality, fastness and security.

The Group determines credit limits by analyzing the client's credit standing, considering: (i) onboarding information (ii) economic and financial information and (iii) historical purchases and payments.

b. Liquidity risk

The cautious management of liquidity risk implies keeping enough cash and securities and credit facilities to be able to settle market positions. Due to the dynamic nature of their businesses, the Group and its direct and indirect subsidiaries use flexible funding by maintaining bank credit facilities.

Management monitors the level of the Company and its direct and indirect subsidiaries' liquidity, considering the expected cash flow and cash and cash equivalents. Furthermore, the liquidity management policy of the Company and its direct and indirect subsidiaries entails projecting cash flows and considering the level of net assets required to achieve these projections and maintain the debt financing plans.

Management is continuing to look into alternatives to guarantee a balanced capital structure information. See further information in notes 1 and 33.

The following are the remaining contractual financial liability maturities and exclude the impact of netting agreements:

	Parent company				
Non-derivative financial liabilities	**Carrying amount**	**6 months or less**	**6 to 12 months**	**1 to 3 years**	**Above 3 Years**
Loans, financing and debentures	154,996	655	17,573	67,499	125,705
Trade payables	4,804	4,804	-	-	-
Related-party loans	155,153	155,153	-	-	-
	314,953	**160,612**	**17,573**	**67,499**	**125,705**

	Consolidated				
Non-derivative financial liabilities	**Carrying amount**	**6 months or less**	**6 to 12 months**	**1 to 3 Years**	**Above 3 Years**
Loans, financing and debentures	643,311	103,933	67,966	389,145	247,373
Trade payables	49,716	49,716	-	-	-
Related-party loans	122,241	122,241	-	-	-
Accounts payable	142,056	34,922	-	16,949	90,187
	957,324	**310,812**	**67,966**	**406,094**	**337,560**

The maturity analyses of the Group do not project cash flows that could occur significantly earlier or at significantly different amounts.

c. Market risk

The Group is exposed to fluctuation in interest rates charged on its loans and financing and exchange rate gains from and losses on the assets and liabilities of the overseas-based direct and indirect subsidiaries. To minimize possible impacts triggered by these changes, the Group adopts the policy of diversifying these contracts.

The Group is primarily exposed to changes in CDI and TJLP interest rates, which are applied to its loans and financing.

As at the reporting date, the profile of the Company's financial instruments yielding interest was:

	Carrying amount			
	Parent company		Consolidated	
Variable-income instruments	**2020**	**2019**	**2020**	**2019**
Liabilities				
Loans and financing (CDI)	(15,095)	-	(68,872)	(101,654)
Loans and financing (TJLP)	(133,154)	(110,848)	(318,176)	(277,802)
Loans and financing (SELIC)	-	-	(1,779)	(1,550)
	(148,249)	**(110,848)**	**(388,827)**	**(381,006)**

The profile of the assets and liabilities resulting from the consolidation of the direct and indirect subsidiaries in US$ as the functional currency has been summarized below, and is exposed to fluctuation in exchange rates:

	Consolidated	
Instruments exposed to fluctuation in exchange rates	**2020**	**2019**
Assets		
Cash and cash equivalents	194	1,073
Accounts receivable	2,370	1,557
Notes receivable	76,961	60,252
Other financial assets	56,088	31,251
	135,613	**94,133**
Liabilities		
Trade payables	(11,586)	(11,664)
Other accounts payable	(129,720)	(106,163)
Accounts payable	(13,330)	(44,338)
	(154,636)	**(162,165)**

Cash flow sensitivity analysis for variable-rate instruments and fluctuation in exchange rates

The sensitivity analysis took into account the loans and financing which are restated by the CDI, TJLP and SELIC rates.

The sensitivity analysis on interest rates on loans, financing and debentures considers an increase and reduction of 25% and 50% in interest rates and how this would impact equity and profit or loss. This analysis takes into account the amounts presented in the financial statements as at December 31, 2020. Except for the previously mentioned 25% and 50% variation, no other changes were projected:

						12/31/2020
Interest rate exposure	**Balances**	**Probable**	**25%**	**50%**	**-25%**	**-50%**
Short-term investments (CDI)	7,231	137	172	206	103	69
Loans and financing						
TJLP	(318,176)	(14,477)	(18,096)	(21,716)	(10,858)	(7,239)
SELIC	(1,779)	(41)	(51)	(61)	(30)	(20)
CDI	(120,603)	(2,291)	(2,864)	(3,437)	(1,719)	(1,146)
Profit or loss for the period		**(16,672)**	**(20,839)**	**(25,008)**	**(12,504)**	**(8,336)**

The interest rates the Company is subject to, based on projections of these rates in a probable scenario and the sensitivity analysis, are the following:

					12/31/2020
	Probable	**25%**	**50%**	**-25%**	**-50%**
SELIC (i)	2.28%	2.85%	3.42%	1.71%	1.14%
CDI (ii)	1.90%	2.38%	2.85%	1.43%	0.95%
TJLP (iii)	4.55%	5.69%	6.83%	3.41%	2.28%

(i) Interest rates were based on information available at Banco Central do Brasil.
(ii) Interest rates were based on information available at CETIP.
(iii) Interest rates were based on information available at BNDES Source: BNDES

The sensitivity analysis into the exchange rates with the 25% and 50% increase and decrease in the consolidated figures is as follows, including the most likely Brazilian Real to US Dollar exchange rate as at December 31, 2020. As at that date, the R$ to US$ exchange rate was R$ 5.1967 to one dollar:

Exposure to exchange rates	**Carrying amount in R$**	**In US$**	**25%**	**50%**	**-25%**	**-50%**
Assets	135,613	26,096	33,903	67,807	(33,903)	(67,807)
Liabilities	(154,635)	(29,756)	(38,659)	(77,318)	38,659	77,318
Exposure in profit or loss for the period		**(3,660)**	**(4,756)**	**(9,511)**	**4,756**	**9,511**

For the effects of the investments in overseas subsidiaries, see below the sensitivity analysis with the probable scenario for the future exchange rate:

					12/31/2020
	Probable	**25%**	**50%**	**-25%**	**-50%**
US dollar (US$)	5.1967	6.4959	7.7951	3.8975	2.5984

Capital management

The objective of the Company´s capital management is to ensure that it maintains its strong credit rating with the financial institutions and its optimal capital ratio, in order to support the Company´s business and maximize value for its shareholders. The Group and its direct and indirect subsidiaries control their capital structures by making adjustments and adapting to the existing economic conditions. In its net debt structure the Group includes loans and financing less cash and cash equivalents.

	Parent company		Consolidated	
	2020	**2019**	**2020**	**2019**
Cash and cash equivalents	-	2	397	1,289
Short-term investments	58,962	-	7,231	-
(-) Loans and financing	(154,996)	(117,772)	(643,311)	(622,585)
Net debt	**(96,034)**	**(117,770)**	**(635,683)**	**(621,296)**
Equity	709,720	689,968	714,097	695,367
Equity and net debt	**613,686**	**572,198**	**78,414**	**74,071**

Classification of financial instruments

The table below shows the main financial instruments by category.

Parent company

	Amortized cost	
Financial assets	**2020**	**2019**
Cash and cash equivalents	-	2
Short-term investments	58,962	-
Loans and other accounts receivable from related parties	2,772	154,589
Total	**61,734**	**154,591**
Liabilities		
Trade payables	4,804	1,446
Related-party loans	155,153	132,400
Loans and financing	154,996	117,772
Total	**314,953**	**251,618**

Consolidated

	Amortized cost	
Financial assets	**2020**	**2019**
Cash and cash equivalents	397	1,289
Short-term investments	7,231	-
Loan and accounts receivable from related parties	-	74,154
Other receivables	76,961	83,459
Accounts receivable	4,060	2,940
Total	**88,649**	**161,842**
Liabilities		
Trade payables	49,716	42,154
Loans and financing	643,311	622,585
Related-party loans	122,240	104,859
Accounts payable	142,057	136,511
Total	**957,324**	**906,109**

The fair values of the financial instruments presented do not significantly vary from the balances presented in the statement of financial position.

30 Segment reporting

Basis for segmentation

The Group has the following 3 strategic divisions, which are its reportable segments. These divisions offer different products and services, and are managed separately because they require different technologies. The following summary describes the operations of each reportable segment of the Company:

Reportable segments	Operation
BioVertis	Company engaged in the experimentation, development, plantation, production and collection of biomass, i.e., Vertix energy cane and sugarcane straw.
BioFlex	Production of biomass, processing biomass for the production and sale of biofuel, electricity, biochemicals and pharmachemicals, technological research and development, sale of sugarcane straw, bagasse and biomass.
Biotech	Development of technology to convert biomass into cellulose ethanol, biochemicals and nanocellulose.

Information about reportable segments

Information related to each reportable segment is set out below. The performance is assessed based on final net income, as Management believes that this information is the most important for assessing the results of the respective segments.

	2020			
	BioVertis	**BioFlex**	**Biotech**	**Total**
Revenue from goods sold and services rendered	165	26,296	13,515	39,976
Cost of goods sold and services rendered	(895)	(56,362)	(21,165)	(78,422)
Gross profit/(loss)	**(730)**	**(30,066)**	**(7,650)**	**(38,446)**
Operating revenue (expenses)				
Administrative expenses	(5,638)	(15,198)	(21,395)	(42,231)
Depreciation and amortization	(27)	(1,704)	(17,962)	(19,693)
Other income (expenses)	373	(179)	7,848	8,042
	(5,292)	(17,081)	(31,509)	(53,882)
Net income/(loss) before financial revenue and expenses	**(6,022)**	**(47,147)**	**(39,159)**	**(92,328)**
Financial revenue	239	10,910	1,118	12,267
Financial expenses	(1,104)	(55,168)	(2,507)	(58,779)
Net financial expenses	**(865)**	**(44,258)**	**(1,389)**	**(46,512)**
Deferred income and social contribution taxes	-	-	4,814	4,814
Net (loss) for the period - Subtotal	**(6,887)**	**(91,405)**	**(35,734)**	**(134,026)**
Other income				(36,138)
Net (loss) for the period				**(170,164**

Segment reporting - Assets	BioVertis	BioFlex	Biotech	Total
Inventories	13	8,240	-	8,253
Property, plant and equipment	3,949	916,842	23,862	944,654
Intangible assets	16,941	111	597,671	614,723

Segment reporting - Liabilities	BioVertis	BioFlex	Biotech	Total
Loans and financing	(7,371)	(532,675)	-	(540,046)
Other accounts payable	(37)	(12,271)	(129,720)	(142,027)
Lease accounts payable	-	-	-	-

	12/31/2019			
	BioVertis	BioFlex	Biotech	Total
Revenue from goods sold	-	23,038	10,499	33,537
Cost of goods sold	-	(44,457)	(17,235)	(61,692)
Gross Profit	**-**	**(21,419)**	**(6,736)**	**(28,155)**
Operating revenue (expenses)				
Administrative expenses	(6,298)	(13,646)	(23,523)	(43,467)
Depreciation and amortization	(1,954)	(4,468)	(7,094)	(13,516)
Fair value of business combination	-	-	218,128	218,128
Other income (expenses)	(8,694)	(4,373)	8,394	(4,673)
Interest on profit (loss) of investees under the equity method	-	-	13,882	13,882
	(16,946)	(22,487)	209,787	170,354
Net income before financial revenue and expenses	**(16,946)**	**(43,906)**	**203,051**	**142,199**
Financial revenue	-	578	1,342	1,920
Financial expenses	(1,035)	(45,357)	(2,191)	(48,583)
Net financial expenses	**(1,035)**	**(44,779)**	**(849)**	**(46,663)**
Deferred income and social contribution taxes	-	-	1,556	1,556
Profit (loss) for the period- Subtotal	**(17,981)**	**(88,685)**	**203,758**	**97,092**
Other income				(18,527)
Net income for the period				**78,565**

Segment reporting - Assets	BioVertis	BioFlex	Biotech	Total
Inventories	18	9,536	116	9,670
Property, plant and equipment	7,730	935,453	27,930	971,113
Intangible assets	16,975	156	475,656	492,787

Segment reporting - Liabilities	BioVertis	BioFlex	Biotech	Total
Loans and financing	(9,176)	(495,636)	-	(504,812)
Other accounts payable	(2,049)	(8,905)	(126,307)	(137,261)

31 Earnings (losses) per share

In compliance with technical pronouncement CPC 41 (IAS 33) - Earnings per share, approved by CVM Resolution 636, the Company presents the following information on earnings per share for the years ended December 31, 2020 and 2019.

Basic: the basic calculation of earnings per share is done by dividing the profit (loss) for the period, attributed to the holders of the Parent Company's common shares, by the weighted average number of common shares available during the period (denominator).

Diluted: the calculation of diluted earnings per share has been based on the following profit or loss attributable to the holders of the Company's common share and weighted-average number of common shares for the effects of all dilutive potential common shares. The Company does not have any potential common shares.

The table below provides data on earnings and the shares used in calculating basic and diluted earnings per share, which are identical because the Company does not have potential common shares.

	2020	**2019**
Net income (loss) for the year	**(169,142)**	**70,400**
Weighted average number of common shares (in thousands)	108,133	100,221
Basic and diluted profit (loss) per share (in Reais)	**(1.5642)**	**0.7024**

32 Insurance

As at December 31, 2020, the Company and its subsidiaries have the following insurance contracts and amounts considered compatible by management with the risks involved:

PP&E and inventory (approximate coverage - R$ 467,093)

• Civil liability: coverage for material and personal damages caused involuntarily to third parties as a result of the production, facilities and assemblies taking place on the insured site;

Administrative (approximate coverage - R$ 122,926)

• Administrative head office: fire, lightning strike, explosion, theft, qualified theft, civil liability and others.

Given their nature and specific features, the risk assumptions made and the respective coverage are not covered by an audit of financial statements, and were not therefore reviewed by our independent auditors.

33 Subsequent events

The most important events occurring after December 31, 2020, are presented in three topics below: (i) renegotiation of loans and financing, describing actions taken by the Company with the support of its controlling shareholders, in order to enhance the business's capital structure; (ii) corporate reorganization, in order to streamline and optimize the corporate structure, including the closure and acquisition of companies; and (iii) selling obsolete property, plant and equipment.

(i) Renegotiated loans and financing

(a) Extended maturities

The balance of debentures payable as at December 31, 2020, is R$ 53,776, maturing on January 08, 2021.

General Debenture holder Meetings took place in FY 2021 which resolved successive renewals to the instrument's maturity term. These meetings took place on January 06, March 31, August 05, September 21 and November 19, 2021, with the latter extending the maturity to January 21, 2022.

(b) Debenture buyback by related parties

Note 17.b.(i) describes the partial acquisition by the Company in the secondary market of 39,229 units of the debentures issued by BioFlex Agroindustrial S.A., which is the Company's indirect subsidiary. This operation was realized in the last quarter of 2020. To do this the Company relied on capital contributions from its parent company, GranInvestimentos S.A., in line with the shareholders' commitment to pursue a better capital structure for the Company.

Also in line with this commitment, the Company was informed by the ultimate beneficiaries of its parent company, GranInvestimentos S.A., that by way of exclusive investment vehicles they had acquired 18,000 additional debenture units in the secondary market.

Lastly, on August 12, 2021, the parent company GranInvestimentos S.A. purchased 22,771 additional units of the debentures in the secondary market, thereby totaling 80,000 units held by related parties, leading the amounts to be reclassified from loans and financing to related parties.

(c) Working capital loan

As at December 31, 2020, the payable balance of the working capital loan is R$ 15,095, maturing in August 2021.

The first amendment was made to the loan agreement on March 12, 2021, which entailed partial payment of R$ 2,500 to the creditor and postponement of the credit facility's maturity to February 25, 2022.

(d) Restructuring loans and financing - Honoring bank guarantees

In FY 2021 the Company restructured its loans and financing with its leading creditors: BNB, BNDES and FINEP. These facilities were covered by a partial bank guarantee, for the case of BNDES and FINEP, and a complete guarantee for the case of BNB, procured from the banks Itaú Unibanco S.A., Banco Santander S.A., Banco do Brasil S.A. and Banco Bradesco S.A.

As a result of these negotiations, the banks Itaú Unibanco S.A., Banco Santander S.A., Banco do Brasil S.A. and Banco Bradesco S.A honored R$ 215,495 of loans and financing taken out from BNB, BNDES and FINEP.

R$ 53,572 of the total was honored by Banco Santander S.A., which in July 2021 had the debt assumed by the shareholder GranInvestimentos S.A. and is now classified as a related party.

On November 30, 2021, the company amended the financing contract consisting of credit facility 13.2.0418.1 with the National Bank for Economic and Social Development - BNDES, which postponed the final maturity of the debits presented in note 17 to May 2025, changed the interest rate practiced for the subtranches and ratified the existing guarantees.

(ii) Corporate reorganization

Closure of the subsidiary BioPlant

On June 21, 2021 Company management resolved to cease the activities and cancel the CNPJ number of the direct subsidiary BioPlant Agroindustrial Ltda.

Merger of BioCelere into BioVertis

On July 31, 2021, the direct subsidiary BioCelere Agroindustrial Ltda. was merged into the fellow direct subsidiary BioVertis Produção Agrícola Ltda. This aimed to: (i) streamline and optimize our corporate structure, lowering the related party balance and operations and consequently consolidating and reducing operational expenses; (ii) merging corporate resources and equity involved in the subsidiaries' operation to enable better management of operations, assets and cash flows, thereby optimizing the use of operational and financial resources and consequently obtaining greater benefits for the economic group's activities; and (iii) greater operational integration will enable better use of existing synergies and the creation of new forms of synergies between company activities, to drive value creation.

(iii) Sale of property, plant and equipment

In January 2021 Company management authorized the sale of obsolete equipment and property, plant and equipment of the indirect subsidiary BioFlex Agroindustrial S.A. For the period January to September 2021, the net proceeds from these sales amounted to a loss of R$ 20,440, which was recorded under other operating expenses.

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Members of the Executive Board

Bernardo de Almeida Gradin
Chief Executive Officer

Guilherme Mottin Refinetti
CFO

Dejair Adão Guerro de Oliveira
Controller
CRC PR-052741/O-4-T-CE