How companies have been contributing to
THE PARIS AGREEMENT
2019 EDITION
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2019 EDITION
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Since the Paris Agreement was adopted in 2015 and became the most important climate agreement on a global scale, Brazil has gone through countless changes, and so has the entire world. Regardless of the varying adherence levels of governments to its propositions, one thing is certain: more and more businesses are adopting strategies that comply with the objectives set in Paris.

In our institutional work at CEBDS, we are constantly receiving signals from leaders of the business sector that there will be no backtracking in these plans, for it is no longer possible to ignore the effects of climate change on the planet and their spillover on businesses. Getting prepared for the effects of the climate emergency - an apt substitute term for “climate change” in the global lexicon, in view of its urgency - and reducing emissions across the whole production chain is a matter of survival in the business world.

The implementation of the Paris Agreement may attract investments of at least USD 13.5 trillion over the next 15 years. Solutions from the Low Carbon Technologies Partnership Initiative (LCTPi) alone - an initiative of which CEBDS is the representative in Brazil, engaging different business sectors in mitigation actions - may generate from 25 to 45 million jobs per year, accounting for 65% of the emissions reductions necessary on a global level. And surely no one wants to be left out of this trend.

Fortunately, the shift is already taking place in large companies, which are promoting thorough analyses of their production chains, adopting internal prices on carbon, integrating climate risks into their planning, and identifying new climate-related business opportunities.

The findings of this publication demonstrate that Brazilian companies are steadily responding to the demands of the climate emergency. The snapshot of 2018 presented here shows how member companies of CEBDS identified opportunities that amount to USD 123.7 billion in positive financial impacts, with an investment of USD 17.5 billion necessary to realize them. By itself, this provides clear justification for investing in solutions that contribute to the decarbonization of the economy.

We are on the right track, but need to pick up the pace. The decade of 2020 to 2030 will be crucial to the process of designing this new future. As you will see on the following pages, the business sector is already aware of the importance of caring for the climate and has been the most prominent player in promoting these changes. From now on, we are charged with the task of adopting more accurate measurements, science-based projects, shared and comparable indicators, and more transparency. All of this must be coupled with an inclusive posture, attentive of the human rights that are intrinsically connected with the core impacts from climate change. Along the road, there are huge opportunities available for the Brazilian economy to become a leading force. And the time to take up this leading role is now.

A heartfelt thanks goes to WWF-Brazil for working by our side in assessing the data from our members, and to CDP for gathering information from the business sector.

I wish you all a good reading and good businesses.

MARINA GROSSI, president of CEBDS

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**LETTER FROM THE PRESIDENT**
The Brazilian Business Council for Sustainable Development (CEBDS) is a non-state, not-for-profit organization that promotes sustainable development in articulation with governments and the civil society, and disseminates the latest concepts and best practices in the field.

CEBDS was established in 1997 by a group of Brazilian business leaders aware of the changes and opportunities brought about by sustainability, especially in the wake of the 1992 Rio Summit.

Today, it brings together some 60 leading business groups in Brazil, which generate over a million direct jobs.

It is also the representative in Brazil of the World Business Council for Sustainable Development (WBCSD), a network of almost 60 regional and national business councils in 36 countries and 22 business sectors, with 200 member companies across all continents.
WHAT IS CTCLIMA?

The Energy and Climate Change Thematic Chamber (CTClima) is a working group composed of prominent Brazilian companies. It aims to address topics concerned with energy and climate change, and to assist businesses in seizing new market opportunities and minimizing risks associated with climate change. CTClima also follows and takes part in the Conference of the Parties to the United Nations Framework Convention on Climate Change (CoP) and in forums of the Federal Government and civil society.

Governance (06/2019 – 06/2021):
Co-leaders: Fábio Cirilo (Votorantim Cimentos) and Keyvan Macedo (Natura)

Coordination:
Karen Tanaka (CEBDS)
INTRODUCTION

In a period of radical changes in technology and social behavior, as well as in the physical parameters of climate, companies are faced with complex challenges that require innovative approaches to their business models.

The climate crisis represents the most urgent of these challenges, due to its disruptive nature and its global reach. At least two factors are considered key elements in tackling its impacts. The first one is innovation, in order to accelerate the transition towards new technologies and develop solutions that help reduce greenhouse gas (GHG) emissions and capture carbon from the atmosphere. The second one is resilience, because we will need to deal with growing levels of unpredictability associated with increasingly frequent and more intense climate events.

The Paris Agreement\(^1\) represented an important milestone; however, its implementation still relies on overcoming a few governance challenges so that it may effectively permeate policies at international, national and local levels. To limit global warming to below 2°C, as provided for in the Paris Agreement, a decarbonization rate of 7.5% p.a. must be met until 2070 at international level. If we aim for the safer target, which consists of pursuing efforts to limit the temperature increase even further to 1.5°C, we must cut carbon emissions by 11.3% p.a. until 2090. However, last year the decarbonization rate achieved was only 1.6%, according to the Low Carbon Economy Index 2019 published by PwC\(^2\).

That is why, more than ever before, leadership from the business sector is required to raise ambition in addressing climate change and to enable paths towards the decarbonization of the economy. This debate goes far beyond the scope of international climate policies and touches on several strategic agendas: economic growth, innovation, infrastructure, generation of employment, just to name a few examples.

This study reaches its second edition, benefiting once more from the collaboration with CDP. On the following pages, we present a detailed analysis of how companies are integrating climate issues into business decision making in Brazil, and what is the joint effect of the business sector.

---

\(^1\) On December 2015, 195 Parties signed the Paris Agreement and made commitments to limit the global average temperature rise to well below 2°C, and to pursue efforts to achieve 1.5°C above pre-industrial levels by the end of the century. Meeting this target will require drastic reductions in greenhouse gas (GHG) emissions of 40% to 72% by the end of the century.

\(^2\) PwC, 2019. The Low Carbon Economy Index tracks the rate of the low carbon transition by each G20 economy and compares this with their Nationally Determined Contributions (NDCs). The assessed variables include: changes in carbon intensity, average annual change in carbon intensity, changes in energy-related emissions, GDP growth, among others. Available at: [https://www.pwc.co.uk/services/sustainability-climate-change/insights/low-carbon-economy-index.html](https://www.pwc.co.uk/services/sustainability-climate-change/insights/low-carbon-economy-index.html)
Based on our findings, we present clear evidence of how climate change embodies a major vector of both risks and opportunities for business, and what actions Brazilian companies are adopting to tackle the climate challenge.

The present study is based on answers supplied by 61 national and global companies operating in Brazil, in response to a request for information sent by CDP on behalf of international investors. Out of a total of 61 companies, 22 are member companies of CEBDS. The companies analyzed represent approximately 90% of the total capital traded in the stock market in Brazil.

According to the Global Risks Report 2019 by the World Economic Forum (WEF), climate change is connected directly or indirectly to three out of five most likely global risks, and to four out of the top five global risks in terms of negative impact3.

There is also a growing understanding of how the climate crisis threatens financial stability. The most striking example is supplied by the Task Force on Climate-related Financial Disclosures - TCFD, under the direction of the Financial Stability Board - FSB. In June 2017, the Task Force presented a set of recommendations for voluntary, climate-related financial risk disclosures to make them consistent, comparable, reliable, efficient and useful for decision making by banks, insurers and investors, generating more transparency across the entire investment chain.

The results of the present study show that Brazilian companies are steadily responding to this demand. We also observed that the companies’ efforts to understand climate impacts from the financial viewpoint contributed to realize associated opportunities. Although still an estimated figure, in 2018 companies reported opportunities that represent positive financial impacts of US$ 124 billion, requiring investments of US$ 17.5 billion to be realized, while risks present potential negative impacts of US$ 45 billion. Therefore, there is an evident business justification for investing in solutions that contribute to the decarbonization of the economy.

Many businesses have already acknowledged it and are driving research and development (R&D) spending for low carbon solutions, with an overall investment in this field of US$ 7.7 billion in 2018.

Since efficient management depends mainly on appropriate measurement capabilities, the establishment of financial metrics lays down a more solid foundation to advance towards the new economy, in which climate issues will be increasingly decisive to competitiveness. For this purpose, organizations will need to rely more and more on future-oriented indicators to steer their strategies under more restrictive scenarios of carbon emissions and changes in physical parameters of climate. These indicators include science-based targets, an approach adopted by 32% of the companies analyzed by this study.

Complementing the navigation system required for the new economy, the methodology of internal carbon pricing is already being adopted by over 600 businesses across the globe and 19 of the companies sampled1 in this study. Recognized by TCFD as a transition tool, this method consists of incorporating a voluntary price on its own emissions as a way to manage climate risks and opportunities.

Decisions made today by businesses, investors and governments in strategic fields such as energy and infrastructure will shape their course of development in the future. The results achieved by the companies and presented in this study reveal the prevailing perception that tackling climate change presents more opportunities than risks to Brazil and that investing to realize such opportunities makes more financial sense than managing climate-related negative impacts.

Accordingly, we expect that this increased awareness by companies will also contribute to include climate-related risks and opportunities in strategic planning and investment decision-making in Brazil. This is a way to tackle the multiple crises facing Brazil all at once, leveraging a new economy able to halt climate change and, at the same time, bring prosperity.

3 The report defines a global risk as an uncertain event or condition that, if occurring, may impact negatively several industries and countries in the next ten years. Available at: http://www3.weforum.org/docs/WEF_Global_Risks_Report_2019.pdf
Brazil, a country with one of the world’s lowest carbon intensity rates according to the Low Carbon Economy Index 2019 published by PwC, presents a number of comparative advantages in the current transition scenario of the economy. Nevertheless, in order to transform these comparative advantages into competitive ones, the country must integrate climate-related financial risks and opportunities into strategic planning as well as into business and political decision-making.

Brazil may also generate economic value by offering the world nature-based solutions to reverse climate change through carbon capture and storage in the form of native or planted forests along with sustainable land use practices, which represent the most cost-effective mitigation measures available. This is one of the findings from the IPCC Special Report on Climate Change and Land, published in August 2019; it states that agroforestry activities, low-carbon farming and restoration practices may contribute to reduce up to 10 GtCO₂e per year until 2050, which is equivalent to 20% of anthropogenic emissions⁴.

The results of the present study, jointly elaborated by CEBDS and CDP, reveal that climate risks and opportunities are already shaping business decisions. To illustrate that, we present cases of the best practices being adopted by member companies of CEBDS.

The lessons learned by businesses may be of help to building appropriate policies aimed at an increased resilience of the Brazilian economy and society in view of the changes caused by climate change. Climate change should be included as a vital variable in proposals for reforms at present under discussion in the country. As a result, economic, tax and environmental policies, among others, would no longer compete with each other, but would instead converge to strengthen Brazil’s competitiveness in this new economy.

The integration of climate issues into the policy making process may even provide solutions to address the current budget deficit through innovative financial instruments such as green bonds and incentivized debentures. There is a growing appetite from investors for such financial products. A good example of their potential is the global impact investing market, an approach that considers environmental, social and governance (ESG) factors in a portfolio selection estimated at US$ 502 billion, including assets from 1,300 impact investors from across the globe. In addition, US$ 521 billion were raised with green bonds issuance in the world, US$ 7 billion in Latin America alone.

In the following pages, we present examples of how some businesses are developing innovative ways to overcome perceived risks and drive investment in Research and Development of solutions that contribute to decarbonization, a strategy that will open the path to the new economy of the 21st century.

⁴ https://www.ipcc.ch/site/assets/uploads/2019/08/4.-SPM_Approved_Microsite_FINAL.pdf
SUMMARY OF FINDINGS:

61 businesses participated in the study from a number of sectors.

Participants represent 90% of capital traded in the Brazilian stock market.

- 83% identify risks related to climate change
- 85% identify opportunities related to climate change
- 93% integrate climate change into their business strategy
- 68% use climate scenario analysis
- 30% have developed a decarbonization plan and 10% are currently developing a decarbonization plan to be concluded within the next two years
- 33% adopt internal carbon pricing*
- 32% have set a science-based target

Participants have invested a total of US$ 7.7 billion in low carbon R&D.

*that is to say, they are voluntarily establishing a price on their own emissions as a tool to manage climate-related risks and opportunities. Another 21% intend to implement it over the next two years.
The analyses were carried out based on business data from companies that disclosed information on their activities in Brazil to investors via CPD. The sample includes Brazilian businesses and multinational organizations operating in Brazil, including associated companies of CEBDS and others. Overall, 61 companies were analyzed, based on the answers submitted to CDP’s Climate Change Program in 2019. Some companies that do not report to CPD answered the same set of questions separately for the sole purpose of this study. The participants are listed in Annex 1.

The variables analyzed relate to the management of risks and opportunities, GHG emissions and emission reduction projects, carbon targets and pricing, as described on sections C2, C3, C4, C6, C7, C9, and C11 of CDP’s climate change questionnaire. The questions analyzed are listed in Annex 2.

Another goal was to reach a better understanding of emission reduction targets, their longevity (short, medium and long term), type and scope, as well as whether they are science-based targets. As to carbon pricing, the work aimed to identify whether internal carbon pricing mechanisms are being used, what are the approaches adopted in decision making, and what values are being applied.

This year’s study presents new indicators, such as investment allocated to Research and Development of solutions for emission cuts and/or carbon capture from the atmosphere. It is important to notice, that those questions are only applicable to chosen sectors. In addition, and in line with the evolution of CPD’s questionnaire, two new indicators were introduced: the use of climate scenario analysis and the development of transition plans to a decarbonized economy.

For all the indicators, data for the fiscal year of 2018 were used as disclosed by participant companies in response to the investor’s information request sent out by CPD in 2019.

As for indicators related to investments made in emission reduction initiatives and the emissions avoided by such projects, we opted to consider the time period of the last four years, adding up the results disclosed by companies in 2019 to those already recorded from 2016 to 2018 and compiled on last year’s edition of this study.

The reason underlying the methodological decision of analyzing cumulative results relates to one of the objectives of this study, that is to say, the analysis of business contribution to reaching the targets set on Brazil’s NDC under the Paris Agreement. Given that the Brazilian NDC targets are projected for the time period between 2025 and 2030, we made an option to consider historic data as to infer what is the overall cumulative contribution of companies participating in the study towards honoring the commitments taken on by Brazil.

It is worth noting that the sample of companies covered by this series of studies fluctuates, since the number of businesses that publicly disclose their information may vary. Therefore, not all indicators are comparable from year to year. To provide a certain level of comparability, in the last section of the study a comparison is presented for the pool of CEBDS member companies.
Satisfying the growing demand from different stakeholders for transparency, businesses are starting to consolidate procedures for the management of climate-related risks and opportunities. As a result, more and more companies are measuring the financial impacts from climate change, and, as a result, are also able to identify related opportunities, as well as to allocate the necessary investments to realize them.

TCFD classifies climate risks into two groups: transition risks, which are associated with new regulation, technology, consumption habits and markets, and physical risks, arising out of changes in climate patterns of extreme events (such as hurricanes and storms) and chronic events (such as droughts and sea level rise). Physical risks may cause direct financial impacts on companies, such as damages to physical assets, and indirect impacts, including disruptions to supply chains.

The analysis of the information supplied by the companies shows that the climate crisis is perceived as an important source of both risks and opportunities for the business sector, where the positive financial impacts from the opportunities outweigh the negative impacts from risks.

**TABLE 1: Financial impacts of climate-related risks and opportunities**

<table>
<thead>
<tr>
<th>Negative Financial Impact (Risks)</th>
<th>Investment Required for Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>US$ 45 billion</td>
<td>US$ 1.8 billion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Positive Financial Impact (Opportunities)</th>
<th>Investment Required to Realize Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>US$ 124 billion</td>
<td>US$ 17.5 billion</td>
</tr>
</tbody>
</table>

Among the participant companies, 84% of them reported climate risks. The most often mentioned ones are physical risks (44%), examples of which include changes in rainfall parameters and variability in climate patterns, as well as the increased intensity and frequency of extreme climate events. Regulatory transition and legal risks come in second (26%), as in the example of carbon pricing.
TABLE 2: Types of climate-related risks reported by companies

<table>
<thead>
<tr>
<th>RISKS BY TYPE</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic: Changes in precipitation patterns and extreme variability in weather</td>
<td>24%</td>
</tr>
<tr>
<td>patterns</td>
<td></td>
</tr>
<tr>
<td>Acute: Increased severity of extreme climate events such as cyclones and floods</td>
<td>14%</td>
</tr>
<tr>
<td>Political and legal: Increased pricing of GHG emissions</td>
<td>11%</td>
</tr>
<tr>
<td>Political and legal: Mandates on and regulation of existing products and services</td>
<td>10%</td>
</tr>
<tr>
<td>Political and legal: Other</td>
<td>8%</td>
</tr>
<tr>
<td>Market: Changing customer behavior</td>
<td>7%</td>
</tr>
<tr>
<td>Political and legal: Enhanced emission-reporting obligations</td>
<td>7%</td>
</tr>
<tr>
<td>Chronic: Rising mean temperature</td>
<td>5%</td>
</tr>
<tr>
<td>Market: Increased cost of raw materials</td>
<td>4%</td>
</tr>
<tr>
<td>Technology: Costs to transition to lower emissions technologies</td>
<td>2%</td>
</tr>
<tr>
<td>Market: Other</td>
<td>2%</td>
</tr>
<tr>
<td>Reputation: Changing consumer preferences</td>
<td>2%</td>
</tr>
<tr>
<td>Acute: Other</td>
<td>1%</td>
</tr>
<tr>
<td>Political and legal: Exposure to litigation</td>
<td>1%</td>
</tr>
<tr>
<td>Chronic: Other</td>
<td>1%</td>
</tr>
<tr>
<td>Technology: Replacement of existing products and services for lower emissions</td>
<td>1%</td>
</tr>
<tr>
<td>alternatives</td>
<td></td>
</tr>
<tr>
<td>Reputation: Increased concerns or negative feedback from stakeholders</td>
<td>1%</td>
</tr>
<tr>
<td>Reputation: Other</td>
<td>1%</td>
</tr>
<tr>
<td>Chronic: Sea level rise</td>
<td>1%</td>
</tr>
</tbody>
</table>

Once these risks materialize, the financial impacts amount to some US$ 45 billion, and are mainly associated with increased operating costs (47%), reduction in revenues due to reduced operating capacity (12%) and increased cost of capital (8%). The companies reported an overall investment of US$ 1.8 billion in the management of such risks, which represents an impact/investment ratio of 24.18.

It is worth mentioning that climate financial impacts are already a reality, since that out of the total figure, US$ 1.8 billion correspond to present financial impacts and other US$ 2 billion to impacts in the short term.
TABLE 3: Measurement of negative financial impacts from climate risks and necessary investment in risk management

<table>
<thead>
<tr>
<th>TIME HORIZON</th>
<th>FINANCIAL IMPACT (US$)</th>
<th>INVESTMENT (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>1,851,408,149.01</td>
<td>21,113,773.85</td>
</tr>
<tr>
<td>Long term</td>
<td>330,090,933.18</td>
<td>623,696,516.78</td>
</tr>
<tr>
<td>Medium term</td>
<td>40,793,626,882.14</td>
<td>1,014,301,439.33</td>
</tr>
<tr>
<td>Short term</td>
<td>1,843,073,572.72</td>
<td>209,962,539.36</td>
</tr>
<tr>
<td>Unknown</td>
<td>376,266,653.61</td>
<td>128,823.15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>45,194,466,190.67</strong></td>
<td><strong>1,869,203,092.47</strong></td>
</tr>
</tbody>
</table>

Most risks are perceived on direct transactions (74%), but they are also distributed across the value chain (24%) and the investment chain (1%).

Where are the risks located?

74% Direct operations

14% Supply chain

11% Customer

1% Investment chain

Considering all the risks reported, the companies participating in the study were able to inform a potential value for financial impact in 54% of cases, either in the form of a figure or an estimated range. Therefore, the values presented may become even more noticeable as climate issues are more and more incorporated into integrated risk management.

CHART 1: Is your company capable of informing a potential value for the financial impact of climate risks?

Yes, an estimated range

Yes, an estimated range

Yes, an estimated range

No, we don't have this figure

33

53

73
An even higher number of companies reported opportunities related to climate change (85%). Out of these, a small fraction of only 3% of identified opportunities is still deemed unfeasible. Most of the opportunities are found in direct operation (65%), but there are opportunities distributed along the value chain, considering both customers and suppliers (33%), and some to be found in investments in the value chain.

There is a wide range of opportunities identified. The ones most often reported relate to the development and/or expansion of low-carbon products and services (16%), use of low-carbon energy (11%), access to new markets (10%), use of more efficient production and distribution systems (7%), changes in consumer preferences (6%), among others.

It is noteworthy that the positive financial impact associated with these opportunities total a significant US$ 123.7 billion, a figure 2.7 times larger than the total negative impacts associated with climate risks. And in order to realize all these opportunities, investments of US$ 17.5 billion are required, with an impact/investment ratio of 7.1.

The area that holds more potential for positive impacts is the development of new low-carbon products and services, which will be the object of the investment section in this report. We can already say that several companies have been investing in this as a way to build resilience for their business during the transition to decarbonized economies. More details are shown on the table below:

### Table 4: Measurement of the positive financial impact of opportunities and investment required to realize them

<table>
<thead>
<tr>
<th>TYPE OF OPPORTUNITY (US$)</th>
<th>FINANCIAL IMPACT (US$)</th>
<th>INVESTMENT (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Products and services</td>
<td>107,118,230,322.37</td>
<td>6,333,102,851.15</td>
</tr>
<tr>
<td>Markets</td>
<td>15,600,120,693.88</td>
<td>8,553,792,394.28</td>
</tr>
<tr>
<td>Resource efficiency</td>
<td>607,291,831.48</td>
<td>100,400,383.35</td>
</tr>
<tr>
<td>Energy source</td>
<td>392,881,462.24</td>
<td>2,572,806,171.04</td>
</tr>
<tr>
<td>Resilience</td>
<td>3,864.69</td>
<td>32,373,772.64</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>123,718,528,174.68</strong></td>
<td><strong>17,592,475,572.47</strong></td>
</tr>
</tbody>
</table>

**CHART 2: Has your company reported Climate-Related Opportunities?**

- **82%** Yes
- **15%** No
- **3%** Yes, we have identified opportunities but are unable to realize them
Considering the variety of economic sectors (see Annex 1) represented in the sample of participant companies, we have an indication that in the understanding of these businesses climate change is a vector for opportunities rather than risks.

Considering all the opportunities reported, the companies analyzed in the study were able to inform a potential value for financial impact in 47% of cases, either in the form of a figure or an estimate range.

**CHART 3: Is your company capable of informing a potential value for the financial impact of climate opportunities?**

<table>
<thead>
<tr>
<th>Yes, an estimated range</th>
<th>21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, an estimative</td>
<td>38</td>
</tr>
<tr>
<td>No, we don't have this figure</td>
<td>66</td>
</tr>
</tbody>
</table>

It is, therefore, a sign of an important maturing process of the companies’ understanding of climate change. In this regard, it is expected that they will advance and establish even more ambitious commitments and make more robust investment in decarbonization, contributing to accelerate the achievement of the new economy.

**BUSINESS STRATEGY**

The large majority of the companies analyzed (93%) state that they integrate climate change into their business strategy. Another practice that starts to be incorporated into business management is the use of future-oriented indicators, among which are scenario analysis and the development of a plan to transition into a low-carbon economy.

**CHART 4: Does Your Company Integrate Climate Issues into its Business Strategy?**

- Yes: 93%
- No: 7%
Scenario analysis is a powerful tool that allows us to compare different alternatives to a baseline using predefined assumptions and hypotheses in order to make better decisions and set goals. It is a practice adopted by 68% of the companies analyzed. Other 18% do not use this type of analysis yet, but they intend to do so in the next two years. The development of a plan to transition into a low-carbon economy is critical to a robust strategy to ensure that goals will be met, and businesses will endure. Among the companies analyzed, 30% already have a plan, and other 8% are developing a plan to be concluded in up to two years.

CHART 5: Use of Climate Scenario Analysis

- Yes, qualitative and quantitative: 40%
- Yes, qualitative: 25%
- No, but we anticipate doing so in the next two years: 18%
- No, and we do not anticipate doing so in the next two years: 9%
- Not Answered: 3%

CHART 6: Has your Company Developed a Plan to Transition into a Low-Carbon Economy?

- Yes: 57%
- Not answered: 30%
- No, we do not have a low-carbon transition plan: 8%
- In development, we plan to complete it in the next 2 years: 5%

Adopting these practices shows that much has been learned about how strategy adaptation to climate change is becoming increasingly important to business resilience.

Using scenario analysis and developing a low-carbon transition plan allow organizations to consider a wider array of assumptions, uncertainties, and possible future states when they assess the financial implications of climate change, which will be increasingly more crucial to ensure that business will endure in the medium and long term.

Considering the transversal nature of the issue, the exercise of identifying, measuring, and managing climate risks and opportunities needs to entail different business areas and not only the risk management area or the sustainability or environmental area. That is why the CDP questionnaire has a set of questions
that tries to understand how this pervades company governance, including specific issues concerning the way you communicate risks and opportunities once they are identified.

**MANAGEMENT OF EMISSIONS**

In 2018, the companies studied were responsible for 48.4 MtCO₂e of total global emissions, which represents 2.4% of total Brazilian emissions considering the data from the Greenhouse Gas Emission and Removal Estimating System (SEEG) published in November 2019⁵.

Among them, 65% reported a decrease in emissions while 23% saw their emissions increase when compared to the previous year. There were companies that did not report on emissions (7%), companies that reported on their emissions for the first time (3%), and those whose emissions did not change significantly (2%).

GHG emissions Compared to the Previously Reported Year

![Diagram showing 65% Decreased, 23% Increased, and 2% Remained the same overall.]

*For calculation purposes, 1,939 billion gross tons of Greenhouse gas measured in carbon dioxide equivalent (CO₂ e) in emissions in Brazil were taken into consideration according to the SEEG report: https://seeg.br.s3.amazonaws.com/2019-v7.0/documentos-analiticos/SEEG-Relatorio-Analitico-2019.pdf*
Considering the general sample of 61 companies, a total of 145 emission-cut initiatives were reported that amount to 13.3 MtCO₂e of avoided emissions.

When it comes to the scopes, according to the nomenclature of the emissions inventory, most of the reductions resulting from these initiatives are concentrated in scope 1, that is, in operations, followed by scope 2 emissions, stemming from energy purchase. The emission reduction initiatives in scope 3, referring to value chain, are a minority.
Emission cuts associated with indirect operations of companies linked to their value chain (scope 3) are a point to be further explored by increasing the capillarity of initiatives in collaboration with both clients and suppliers. The reason for doing so is the sharing of risks and costs, which is a good strategy considering that the areas with higher potential for emissions reduction from now on will be distributed along the value chain.

The predominance of emissions reduction initiatives in the energy efficiency area maintain a trend seen in the last four years, as shown in the first study of this series published last year. These reduction initiatives are generally investment areas with negative marginal abatement cost, because they promote cost reduction and/or increase of operational efficiency.

There are still GHG reduction opportunities in these areas, but to reach the reduction necessary to limit temperature increase to 2°C, with efforts to reach only 1.5°C, “fast” and “unprecedented” changes will be needed in key sectors of the economy such as energy, transportation, industry, and land use, according to the Special Report on Global Warming of 1.5°C (SR1.5) of the Intergovernmental Panel on Climate Change (IPCC).

### Change of scenario

It is important to note that the climate commitments that Brazil has made under the Paris Agreement are based on a scenario in which deforestation is under control. That is why the resumption of deforestation increase risks not only for the fulfilling of Brazilian climate commitments, but also for the chances of the world being able to reverse the climate crisis.

Even the most pessimistic climate models consider the maintenance of the Amazon forest as a carbon sink. If the Amazon continues to be burnt down, turned into pasture or soy fields, even the most optimistic climate models project an increase in the global average temperature of more that 2°C.

This is a threat both in terms of reputational risk, which can result in tariff and non-tariff barriers for Brazilian products in the foreign market, and in terms of physical risk with the loss of important ecosystem services rendered by forests and their flying rivers. This directly impacts the Brazilian economy, which largely depends on the rainfall regime regulated by forests (hydroelectric energy generation, food security, exports etc). See image:
Therefore, even companies whose operations and value chain are not directly exposed to the risk of deforestation can benefit from a more active engagement in the fight against deforestation and the recovery of degraded areas because of the high reputation and physical risks associated with deforestation.

This understanding is aligned with the CEBDS Agenda for a Sustainable Country\(^7\), which in proposal 5 establishes as priority: zero net deforestation of Brazilian biomes and increase in the afforestation rates in the medium term. The solutions in that document were devised jointly with the CEBDS Leaders’ Board, a working group comprised of the companies’ executives.

It is also manifest in CEBDS’ position on deforestation, which champions improving control and monitoring systems to zero illegal deforestation in the short term in the Amazon and other biomes and to reduce legal deforestation.

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\(^7\) https://biblioteca.cebds.org/agenda-cebds-2018
EMISSION REDUCTION TARGETS

More than 95% of the scientific community agrees that anthropogenic activities are the primary cause of the destabilization of climate on Earth. Therefore, in our lifetime we have witnessed changes that would have happened over the span of geological eras. To revert this process, we will need to make a 45% reduction in global GHG emissions by 2030, considering pre-industrial levels. In addition, the world must be carbon neutral by 2050, that is, it will have to stop emitting more CO₂ than it is removed from the atmosphere.

The Paris Agreement represents an important landmark to laying out decarbonization routes. Yet, we are still on a path of increasing emissions, and if current rates are maintained it will lead to an increase in mean temperatures of 3.7°C to 4.8°C by the end of this century (2100), resulting in a dangerous and possibly irreversible climate change.

Therefore, companies need to take a leading role now more than ever. It is up to companies to define emission reduction goals aligned with the ones set out in the Paris Agreement. Failing to do so will frustrate shareholders expectations and also jeopardize the business longevity in the mid to long term.

Of the companies analyzed in this study, 73.7% have emission reduction goals. Most of them (82%), however, are short-term goals to be met by up to 2025, and only 15% go beyond 2025.

Target-year of the goal

![Diagram showing emission reduction targets]

We noticed that 32% of the companies have committed to science-based target, that is, aligned with the Paris Agreement goals. This is an important development, but most cases still depend on implementation given that just 7% have targets that have been approved by the Science-Based Targets initiative committee.

The Science-Based Targets initiative (SBTi) supports science-based goals setting as a powerful way to increase companies’ competitive advantage in transitioning to a low-carbon economy. It is a collaboration effort between CDP, the World Resources Institute (WRI), the WWF and the United Nations Global Compact (UNGC). The science-based goals are supported by the concept of a global carbon budget that calculates the GHG emissions released into the atmosphere since the beginning of the Industrial Revolution and the consequences to the climate of this increase in concentration levels. Therefore, we can estimate the emissions level that can be placed in the atmosphere so that we have the chance to maintain global warming levels below 2°C, the limit defined by the scientific community to avoid hazardous and irreversible climate change.⁸

Considering only Brazilian companies associated to CEBDS, 82% of them have adopted targets, among which 54% have science-based targets (already approved or to be approved by the Science Based Targets Initiative committee).

Our objective is that the setting of science-based targets will become a standard commercial practice and will allow corporations to play an important role in filling the emissions gap left by the commitments made by governments in the framework of the Paris Agreement.

Targets should be combined with continuous investment in emissions reduction and decarbonization strategies, topics that will be developed in the next section.

**INVESTMENTS**

It is estimated that the investment Brazil will need to make to fulfill its Nationally Determined Contribution (NDC) will total R$ 890 to 950 billion by 2030\(^9\). This is a significant amount of investment that will require the participation of the business sector.

Brazilian companies and global companies who have operations in Brazil analyzed in this study invested US$ 1.3 billion in 145 emission-reduction initiatives in 2018. Together they sum up 13.3 MtCO\(_2\)e of avoided emissions, with an average cost of R$ 130 per ton of CO\(_2\)e avoided. These initiatives are related mainly to energy efficiency, both in production processes and in facilities, represent more than half of the emission-cut initiatives reported: 51% according to the general sample of companies analyzed. Installation and purchase of low-carbon energy also represent a share of 21% of these initiatives, which shows the significance of this option for companies to explore.

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\(^9\) [http://biblioteca.cebds.org/oportunidades-desafios-metasndc](http://biblioteca.cebds.org/oportunidades-desafios-metasndc)
From 2015 to 2018, the private sector carried out 1,318 GHG emission-reduction projects that accounted for a total of US$ 2.1 billion in initiatives to cut emissions, which for the most part include energy efficiency, process optimization, and seeking low-carbon energy sources. Although these values are not comparable, since the sample of the companies changed from last year’s study, it is worthy to analyze the nature of the projects and initiatives in mitigation that are focused mostly in energy efficiency projects. Those projects present economic benefits such as cost reduction and increased operational efficiency in the near term and are cost-effective measures, leading to a lower global cost.

The GHG marginal abatement cost curve\(^\text{10}\) in Brazil (see figure below) show that measures related to energy efficiency, fuel switch appear with a negative abatement cost. This means that they represent mitigation opportunities with no direct costs. Besides that, a more detailed analysis shows we can see excellent opportunities in areas such as transportation, waste management, buildings, logistics, and infrastructure bottlenecks. But the abatement cost of those mitigation options demand larger investments; therefore, it will require companies to show more conviction and/or clearer signs of emission prices (carbon pricing mechanism) or incentives for a cleaner production.

\(^{10}\) The marginal abatement cost curve is an analytical tool that seeks to identify the reduction costs of a set amount of GHG from a mitigation measure. This then guides the decision maker with respect to more cost-effective measures, that is, where investments should be made, considering costs and effects.
To reach this greenhouse gas reduction cost curve in Brazil, McKinsey & Company assessed more than 120 GHG reduction opportunities in all the main sectors of the Brazilian economy. Results show that Brazil has the estimated potential of reducing emissions from 2.8 GtCO₂e to 0.9 GtCO₂e by 2030, that is, an annual reduction of 1.9 GtCO₂e, equivalent to a 70% cut in emissions. Figure 2 illustrates the main initiatives that comprise this amount of reduction in GHG and the cost associated to each of them, considering the sum of investments and operating costs minus the resulting benefits.

**FIGURE 2: Marginal abatement cost of emissions in Brazil until 2030**


**Innovation**

We can note that there is a group of companies betting on innovation as a response to the climate crisis, with 24% of the companies analyzed invested in Research & Development for low-carbon solutions. Together these companies reported an investment of US$ 7.7 billion in 2018 in 47 projects focusing mainly on the energy sector as seen on Table 5:

11 file:///C:/Users/User/Downloads/20090814_10A_PAULO%20FERNANDES%20V%20VICENTE%20ASSIS%20SUSTENTABILIDADE.PDF
TABLE 5: Investment in Research & Development for Low-carbon Solutions

<table>
<thead>
<tr>
<th>INDUSTRY</th>
<th>INVESTMENT AREA</th>
<th>NUMBER OF INITIATIVES</th>
<th>TOTAL INVESTED (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy utility networks</td>
<td>R&amp;D</td>
<td>10</td>
<td>19,086,843.60</td>
</tr>
<tr>
<td>Cement and concrete</td>
<td>Property, plant, and equipment</td>
<td>1</td>
<td>480,000,000.00</td>
</tr>
<tr>
<td></td>
<td>R&amp;D</td>
<td>1</td>
<td>176,000,000.00</td>
</tr>
<tr>
<td>Trading, wholesale, distribution, rental and leasing</td>
<td>R&amp;D</td>
<td>1</td>
<td>64,411,574.50</td>
</tr>
<tr>
<td>Thermal power generation</td>
<td>Equipment</td>
<td>1</td>
<td>7,947,895.42</td>
</tr>
<tr>
<td></td>
<td>Property, plant, and equipment</td>
<td>2</td>
<td>6,825,723,044.42</td>
</tr>
<tr>
<td></td>
<td>R&amp;D</td>
<td>13</td>
<td>76,850,351.81</td>
</tr>
<tr>
<td></td>
<td>Services</td>
<td>1</td>
<td>12,109,376.01</td>
</tr>
<tr>
<td>Renewable Power Generation</td>
<td>R&amp;D</td>
<td>2</td>
<td>550,847.79</td>
</tr>
<tr>
<td>Metal Casting, Refining and Forming</td>
<td>R&amp;D</td>
<td>1</td>
<td>55,000,000.00</td>
</tr>
<tr>
<td>Chemicals</td>
<td>R&amp;D</td>
<td>1</td>
<td>44,000,000.00</td>
</tr>
<tr>
<td>Tobacco</td>
<td>Property, plant, and equipment</td>
<td>1</td>
<td>16,113.81</td>
</tr>
<tr>
<td></td>
<td>Products</td>
<td>2</td>
<td>55,000.00</td>
</tr>
<tr>
<td>Commercial and Consumer Services</td>
<td>Property, plant, and equipment</td>
<td>5</td>
<td>4,771,738.36</td>
</tr>
<tr>
<td></td>
<td>R&amp;D</td>
<td>1</td>
<td>79,262.40</td>
</tr>
<tr>
<td></td>
<td>Services</td>
<td>2</td>
<td>231,450.13</td>
</tr>
<tr>
<td>Coal mining</td>
<td>Property, plant, and equipment</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td></td>
<td>7,766,833,498.24</td>
</tr>
</tbody>
</table>

When we consider only Brazilian companies who are members of CEBDS, they were the ones who reported most of these projects (total of 33) and were responsible for almost all of the investment in Research & Development of low-carbon solutions - US$ 7.6 billion of a total of US$ 7.7 billion in the general sample.
CARBON PRICING

More private investment in decarbonization could be encouraged by a price signal for carbon emissions in the Brazilian economy with the adoption of a pricing mechanism for GHG emissions. Carbon pricing, be it through taxation or an emission trade system, is a reality in 45 countries and 30 jurisdictions, including many of our Latin-American neighbors, such as Argentina, Chile, Colombia and Mexico.

Carbon pricing can be mandatory or voluntary. In the mandatory approach, the main instruments currently in use are taxation, the emission cap and trade system or a combination of the two. Following the polluter-pays principle, both mechanisms allow costs generated by carbon emissions to be internalized, that is, companies start to include these external (involuntary) costs in their business decisions.

The Study “Mudança do Clima - Avaliação dos reflexos das metas de redução de emissões sobre a economia e a indústria brasileira” [Climate Change - an assessment of the consequences of the emission cut goal on the Brazilian economy and industry], conducted by the Federation of Industry of the State of São Paulo - FIESP, foresees an increase in Brazilian emissions in the period between 2020 and 2050. The model used in the study shows that the emission-cut goals included in the Brazilian INDC for 2030 would be met, but after this the emissions would start increasing again if additional measures were not carried out.

Carbon pricing is an instrument that would allow investment in low-carbon projects to be redirected, because the cost of carbon emissions would become an integral part of the financial analysis. Good carbon pricing policies also foster innovation and new types of economic growth based on technologies, processes, and services that are carbon neutral or present low carbon intensity.

There is growing consensus among leaders of Brazilian companies that carbon pricing may encourage investment, guarantee competitiveness, and foster low-emission technology innovation in the country. A group of Brazilian companies has established its position by means of the open letter of the Private Sector Supporting Carbon Pricing in Brazil. Devised by the Business Initiative on Climate (IEC) with the support of the Carbon Pricing Leadership Coalition (CPLC), an initiative of the World Bank, the document was signed by more than 30 CEOs and CFOs of large companies and organizations and advocates that a pricing mechanism be established that fits the characteristics of the Brazilian economy and its GHG emission profile. It intends to encourage investment, guarantee competitiveness, and foster low-emission technology innovation.

INTERNAL CARBON PRICING

As more businesses are starting to experience financial impacts associated with climate change, several companies have adopted an internal price on carbon to support its strategic planning and investment decision making.

Essentially, companies are voluntarily incorporating the cost generated by their own emissions into their budget, which contributes to manage risks and make investment decisions in view of different climate scenarios. This trend was strengthened by the publication of TCFD recommendations, which presents planning on the basis of a number of climate scenarios as a key element for a resilient business strategy.

Therefore, an internal price on carbon helps in identifying possibilities of new revenue sources, and serves as a driver to enhance efficient energy uses, reduce costs and inform decisions of investment. Internal carbon pricing is an approach adopted by 33% of the companies in the study. Other 35% of them have not yet adopted it, but intend to do so in the next two years.

CHART 11: Does your company adopt an internal price on carbon?

When considering the member companies of CEBDS, we observe that 50% of them already adopted an internal carbon pricing approach, and 18% intend to adopt one in the next two years.

The most widely adopted methodology for establishing an internal price is the shadow price. Companies use the shadow price to evaluate the profitability of an investment project if GHG emissions were to be taxed or if the company had to pay for additional costs in order to meet targets imposed by a regulated carbon market. It is a hypothetical cost meant to establish an estimated cost of a product or service for which there is no defined market. The other methods of internal pricing are: offset, implicit price and valuation of externalities; and the same company may choose to adopt more than one of these approaches.

‘‘When considering the member companies of CEBDS, we observe that 50% of them already adopted an internal carbon pricing approach, and 18% intend to adopt one in the next two years.’’
## TABLE 6: Companies that adopt an internal price on carbon

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>TYPE</th>
<th>PRICE (US$/TCO₂E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cia Paranaense de Energia - COPEL</td>
<td>Shadow price</td>
<td>1.29</td>
</tr>
<tr>
<td>Lojas Renner S.A.</td>
<td>Offset</td>
<td>1.44</td>
</tr>
<tr>
<td>Ecorodovias Infraestrutura e Logística S.A</td>
<td>Shadow price</td>
<td>2.76</td>
</tr>
<tr>
<td>Itausa Investimentos Itaú S.A.</td>
<td>Offset</td>
<td>3.71</td>
</tr>
<tr>
<td>Enel Distribuição São Paulo</td>
<td>Shadow price</td>
<td>5.15</td>
</tr>
<tr>
<td>Companhia Energética Minas Gerais - CEMIG</td>
<td>Shadow price</td>
<td>6.54</td>
</tr>
<tr>
<td>Klabin S/A</td>
<td>Shadow price; Implicit price; Offset</td>
<td>7.21</td>
</tr>
<tr>
<td>Votorantim Cimentos</td>
<td>Shadow price</td>
<td>10.00</td>
</tr>
<tr>
<td>Suzano SA</td>
<td>Shadow price</td>
<td>10.00</td>
</tr>
<tr>
<td>LIGHT SA</td>
<td>Shadow price</td>
<td>10.00</td>
</tr>
<tr>
<td>Grupo Boticário</td>
<td>Shadow price</td>
<td>10.60</td>
</tr>
<tr>
<td>Itaú Unibanco Holding S.A.</td>
<td>Shadow price</td>
<td>14.40</td>
</tr>
<tr>
<td>CPFL Energia SA</td>
<td>Shadow price</td>
<td>15.00</td>
</tr>
<tr>
<td>Philip Morris International</td>
<td>Shadow price; Internal fee</td>
<td>17.00</td>
</tr>
<tr>
<td>Centrais Eletricas Brasileiras S/A (ELETROBRAS)</td>
<td>Shadow price</td>
<td>19.94</td>
</tr>
<tr>
<td>Barry Callebaut AG</td>
<td>Shadow price</td>
<td>30.49</td>
</tr>
<tr>
<td>Braskem S/A</td>
<td>Shadow price</td>
<td>35.49</td>
</tr>
<tr>
<td>Corbion</td>
<td>(void)</td>
<td>57.41</td>
</tr>
<tr>
<td>Natura Cosméticos SA</td>
<td>EP&amp;L (Own Methodology)</td>
<td>73.21</td>
</tr>
</tbody>
</table>
The most often mentioned objectives for the adoption of an internal price on carbon are: (i) navigating emissions regulation; (ii) driving low-carbon and energy efficiency investments; (iii) identifying and seizing low-carbon opportunities; (iv) changing internal behavior; (v) expectations of stakeholders.

The internal price ranges reported by participants vary from US$ 0-5 to US$ 71-75.

**CHART 12: Frequency x Price range (US$/tCO$_2$e)**

When we compare internal prices adopted by Brazilian companies to global prices consolidated in the State & Trends of Carbon Pricing 2019 report by the World Bank\(^{14}\), we reinforce the narrative of the excellent opportunity currently opened up by carbon pricing to Brazil and Brazilian companies: it is possible to reduce GHG emissions at a lower cost in Brazil in comparison to other countries. We observe that internal prices on carbon of Brazilian companies are significantly lower than in other countries. Carbon prices internally adopted by global companies vary from US$ 0.3/tCO$_2$e to US$ 906/tCO$_2$e.

Over the last year, we started working on assessing the overall impact of Brazilian businesses, beginning with CEBDS member companies. At first, we gathered information on GHG emissions monitoring activities, emission targets, and the adoption of internal carbon pricing approaches. This year, for the purpose of increasing sample size and representativeness, our analyses included a larger number of companies as well as new information regarding business strategies and management of risks and opportunities. That way, we intend to continue in the coming years to monitor contributions made by the business sector in Brazil, as a way of providing incentives to scale up solutions towards the new economy.

The data shown here in detail lend visibility to the work carried out by the Brazilian industry across different sectors, highlighting its leadership within the business community and its firm commitment to climate issues. On this second edition of the study, we chose to keep a section dedicated to CEBDS member companies, as to generate an ongoing, independent monitoring of performance and serve as an internal basis of comparison. Since last year, we have improved our methodology, and companies are maturing their reporting activities. It is noticeable, though, that despite our best efforts, not all companies continuously reported their data to the study year after year.

In the last edition of this study, CEBDS member companies invested a total of US$ 2.1 billion in mitigation projects between 2015 and 2017. Considering the Brazilian companies who are members of CEBDS, the avoided emissions reported in 2018 equaled 11.6 MtCO2e and a total investment of US$ 1.1 billion. The amount invested represented 79% of the total sample analyzed in this year’s study, which indicate that, proportionally, CEBDS companies’ investments are higher than the average. Furthermore, CEBDS member companies were the ones who reported most of the projects (total of 33) and were responsible for almost all of the investment in research & development of low-carbon solutions – US$ 7.6 billion out of a total of US$ 7.7 billion in the general sample.

Next, we present individually reported data from CEBDS member companies that shared data of their operations in Brazil. The companies reported their emission data (the sum of scopes 1 and 2) from the last three years. We also present absolute and/or intensity targets and the fact that the company currently commits to a science based-target. And, more, as they shared their good practices in these areas, let’s take a closer look at them.
ALCOA

Emission reduction targets

- No absolute target reported.
- Intensity target: 20% reduction of Scope 1+2 emissions (location-based) by 2030 from 2015 base year. Metric adopted for the target: Metric tons CO$_2$e per metric ton of aluminum.
- Is this a science-based target? No, but we anticipate setting one in the next two years.

Risks & Opportunities related to climate change
The company disclosed aggregate global information only.

Initiatives in Mitigation & Investment in innovation
The company disclosed aggregate global information only.

Internal Price on Carbon
Alcoa has not yet adopted an internal price on carbon.

Business strategy and use of scenario analysis
Alcoa already integrates climate change issues into its business strategy. To that end, it uses climate scenario analysis to inform its decision making. In addition, it has already developed a plan to transition to a low-carbon economy.

BEST PRACTICES:
In Poços de Caldas, the increase in the use of recycled material in the production of aluminum billets (2015: 14% for 2018: 35%) provided reduction of waste generation, Greenhouse Gases emissions (30% lower compared to the conventional production process) and costs (over R$ 2 million/year). In Juruti, since the beginning of the Green Locomotive project, which aims to mitigate CO$_2$ emissions generated by locomotives, the following results have been achieved: 70,000 seedlings planted, R$ 175,000 generated for the community, Participation of 40 community projects and 42 restored hectares, neutralizing 11,200 tCO$_2$. In São Luis (MA), Alumar has an energy efficiency program focused on 3 pillars: Thermal performance of calcinators (reduction from 2.9 to 2.8 GJ / t in units 1 and 2), Treatment of heaters (reduction from 1.23 t / t 2018 to 1.18 t / t – realized year) and Stability of boilers (energy intensity achieved: 6.44 GJ/t).
**AMBEV S.A.**

### Emission reduction targets

- **Absolute target:** 25% reduction of Scope 1+2 emissions (market-based) by 2025 from 2017 base year.
- **No intensity target reported.**
- **Is this a science-based target?** Yes, we consider this as a science-based target, but this target has not been approved by the initiative.

### Risks & Opportunities related to climate change

- **0 RISKS**
  - Ambev has not reported risks
- **2 OPPORTUNITIES**
  - To realize opportunities, Ambev is INVESTING
  - **US$41,000,000**

### Initiatives in Mitigation & Investment in innovation

Ambev reported the existence of initiatives but has not reported investment nor emission reduction figures. The initiatives address the following areas:
- **Low-carbon energy installation.**
Ambev has not reported any investments in low-carbon innovation projects.

### Internal Price on Carbon

Ambev has not yet adopted an internal price on carbon.

### Business strategy and use of scenario analysis

Ambev already integrates **climate change** issues into its business strategy.

### BEST PRACTICES:

In the past two years, Ambev has announced pioneer initiatives for carbon emissions reduction and increased use of renewable energy across its value chain. In 2018, in partnership with Volkswagen, the company has facilitated the first 100% electric truck of the Americas: this will be the first time a company uses all-electric vehicles on a large scale. By 2023, 1/3 of the fleet serving the company will be zero emissions vehicles, emitting neither CO₂ nor other pollutants. It will avoid emissions of **30.4 thousand tons of carbon** per year. In 2019, another impressive step was taken: the announcement of the construction of 31 solar plants across Brazil by March 2020. The plants will generate sufficient energy to meet the demands of all 94 direct distribution centers of the company. With over 50 thousand solar panels, the parks will have capacity to produce 2,600 MW per month, which will avoid over **2.9 thousand tons of CO₂ emissions** yearly.
**Emission reduction targets**

- No absolute target reported.
- No intensity target reported.

**Risks & Opportunities related to climate change**

1 PHYSICAL RISK

0 OPPORTUNITIES

*It has not reported any opportunities

**Initiatives in Mitigation & Investment in innovation**

Anglo American invested US$441,555 in two initiatives to mitigate emissions in 2018. The estimated impact of these initiatives is an emission reduction of 75,445 tCO₂e.

The initiatives addressed the following areas:

**Internal Price on Carbon**

Anglo American has not yet adopted an internal price on carbon.

**Business strategy and use of scenario analysis**

Anglo American already integrates climate change issues into its business strategy. To that end, it uses climate scenario analysis to inform its decision making. In addition, it has already developed a plan to transition to a low-carbon economy.
Initiatives in Mitigation & Investment in innovation

Banco Bradesco S/A has invested US$ 23,565,000 in 6 initiatives to mitigate emissions in 2018. The estimated impact of these initiatives is an emission reduction of 25,051 tCO₂e.

The initiatives addressed the following areas:
- Energy Efficiency: Processes to reduce emissions.
- Low carbon innovations

Bradesco has invested significantly in increasing access to its services and products through digital channels.

Risks & Opportunities related to climate change

3 RISKS
- 1 transition risk and 2 physical risks

US$ 1,268,880

3 OPPORTUNITIES

To manage risks and/or realize opportunities, the bank is INVESTING between 2016 and 2018.

Emission reduction targets

- **Absolute target: 1% reduction** of Scope 1 emissions by 2018, from 2017 base year.
- **Intensity target: 4.6% reduction** of Scope 1 emissions by 2018, from 2017 base year. This target uses as metric “tons of CO₂ per R$ million in revenue”.
- **Is this a science-based target?** No, but we anticipate setting one in the next two years.*

*R:1 transition risk and 2 physical risks

Internal Price on Carbon

We adopt the carbon pricing approach in analyses of risks and opportunities at operation and business levels.

Business strategy and use of scenario analysis

Bradesco already integrates climate change issues into its business strategy, which includes digitalization of services, offer of financial solutions that promote the transition to a less carbon-intensive economy, as well as efforts to reduce emissions from its own operation.

BEST PRACTICES:

We set three-year targets for impact reduction. Some of the targets set for 2019-2021 are in line with the ambition level required to limit global warming to 2°C. For over 10 years, we have been publishing yearly carbon emissions inventories by the Brazil GHG Protocol Program with a Gold label. Since 2006, we have offset 100% of scope 1 and 2 emissions. We take part in UNEP FI's pilot programs promoted that develop methodologies to measure the financial impact of climate scenario analysis on credit portfolios of banks, in line with the recommendations from the TCFD. Besides providing greater practicality and better customer experience, on average, a digital transaction emits almost 280 times less carbon than a transaction through a physical channel. In 2018, 96% of Bradesco’s transactions took place digitally. A deployed example is the account opening via mobile app.
**BANCO DO BRASIL S/A**

**Emission reduction targets**

- **Absolute target: 20% reduction** of Scope 2 emissions (location-based) by 2018 from 2017 base year, as disclosed to DJSI and published*.


**Risks & Opportunities related to climate change**

- **1 TRANSITION RISK**
- **1 OPPORTUNITY**

**Initiatives in Mitigation & Investment in innovation**

During the last 3 years, Banco do Brasil has financed investments for emission reduction in agribusiness, and climate change mitigation and adaptation, in accordance with the objectives set out on the National Plan for Climate Change, the Program for Low Carbon Agriculture, and the National Program to Strengthen Family. In 2018, Banco do Brasil has invested **US$ 2,324,793,814** resulting in **6,155 credit operations**.

**Internal Price on Carbon**

Banco do Brasil S/A has not yet adopted internal carbon pricing.

**Business strategy and use of scenario analysis**

Banco do Brasil S/A already integrates climate change issues into its business strategy. To that end, it uses climate scenario analysis to inform its decision making.

**BEST PRACTICES:**

The Program for Rational Water Management, which monitors monthly figures of every individual unit of the bank, accounted for a reduction of 1.5% in total consumption compared to 2017 levels and generated savings of **R$ 1.1 million**.

The initiatives for reduction of electricity consumption, including in-house awareness campaigns, replacement of fluorescent bulbs with LED bulbs and modernization of air conditioning equipment, have avoided **R$ 8 million** in expenses and reduced energy consumption by 1.8%, compared to 2017 levels.

The strategy for digital transformation and employee engagement contributed to cut down paper use by **259 tons**, which means avoiding approximately 5.5 thousand trees from being felled.

Under the Program for Toner Cartridge Reconditioning, 102,359 reconditioned units were purchased (i.e. 99% of total use in 2018), avoiding **R$ 54.4 million** in expenses.
Emission reduction targets

- **Absolute target: 9% reduction** of Scope 1 + 2 emissions (location-based) + 3 (upstream & downstream) by 2018 from 2015 base year.
- **No intensity target reported.**
- **It is not a science-based target.**

**Risks & Opportunities related to climate change**

Santander Brasil assesses social and environmental aspects when accepting new clients and granting credit to projects and companies of sectors deemed as critical. For this purpose, it has developed its own analysis process, which includes, among other factors, the physical hazards related to the clients’ exposure to water stress. Another relevant theme is renewable energy, as they generate opportunities for developing and operating sustainable businesses. In this regard, Santander set a target of using renewable energy sources in 100% of its operations by 2025.

**Initiatives in Mitigation & Investment in innovation**

Santander Brasil invested US$ 4,000,000 in initiatives that involve energy efficiency and control of fugitive emissions, contributing to reduce approximately 5,700 tCO₂e. The initiatives addressed the following areas: Low-carbon energy purchase and Fugitive emissions reductions.

**Business strategy and use of scenario analysis**

Santander Brasil incorporates climate change issues into its business strategy, including (i) opportunities associated with increased consumption of renewable energy in operations and (ii) financing socio-environmental businesses, to contribute to the transition towards a low-carbon economy, as established by Brazilian NDCs.

**BEST PRACTICES:**

The commitment of Santander Brasil is affirmed by the socio-environmental businesses enabled by the bank, ranging from individual enterprises to large corporations. In the renewable energy area, the bank takes part in projects through Project Finance and Asset Based Finance (ABF), which totaled R$ 53 billion CAPEX in support and/or credit, corresponding to 10.2 GW in solar and wind power alone. For retail credit (branch network) and Santander Financiamentos (associated points-of-sale), the bank has carried out over 20 thousand transactions, corresponding to US$ 1.1 billion CAPEX and 220 MW energy production. Since 2012, we have financed low-carbon agriculture with R$ 1.8 billion and monitored 6,000 farms daily for socio-environmental issues such as slave labor, bans, and conservation areas.

We also took part in Green Bonds issuance totaling R$ 12.7 billion in projects related to energy efficiency, water treatment, wind power and socio-environmental best practices.
**Emission reduction targets**

- **Absolute target**: 24.2% reduction of Scope 1+2 emissions (location-based) by 2021 from 2008 base year.
- **Intensity target**: 39% reduction of Scope 1+2 emissions (location-based) by 2021 from 2008 base year. Metric adopted for the target: Metric tons CO₂e per metric ton of product.
- **Is this a science-based target?** Yes, we consider the absolute target as a science-based target, but this target has not been approved by the initiative.

**BEST PRACTICES:**

Braskem’s low-carbon transition plan aims at strategies that include energy efficiency and GHG emissions reduction initiatives, besides the possibility of a carbon-pricing system being imposed in Brazil in a short-term future.

In 2018, we built a fermentation pilot plant at the Renewable Chemicals Research Center (RC) located in Campinas (Brazil), which will allow us to advance our renewable chemicals projects and develop new products and processes. These projects are closely related to the circular economy proposal, at the beginning of the value chain, seeking to develop products that contribute to CO₂ capture.
Caixa Econômica Federal

Emission reduction targets

- No absolute target reported.
- No intensity target reported.

Risks & Opportunities related to climate change

<table>
<thead>
<tr>
<th>TRANSITION RISK</th>
<th>OPPORTUNITIES</th>
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<td>1</td>
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*It has not reported any opportunities

Initiatives in Mitigation & Investment in innovation

Caixa Econômica Federal has invested US$90,000,000 in one initiative to mitigate emissions in 2018. The estimated impact of these initiatives is an emission reduction of 768 tCO₂e. The initiatives addressed the following areas: Low-carbon energy installation.

Caixa Econômica Federal has not reported any investments in low-carbon innovation projects.

Internal Price on Carbon

Caixa Econômica Federal has not adopted internal carbon pricing yet

Business strategy and use of scenario analysis

Caixa Econômica Federal already incorporates climate change issues into their business strategy.

BEST PRACTICES:

We currently finance Santa Rosa Waste Treatment Plant, located in Seropédica (RJ), which receives waste from the metropolitan area of Rio de Janeiro. It is the first financing transaction that integrates Caixa’s credit lines with the Global Carbon Market, for it utilizes carbon credits in the form of Certified Emission Reductions (CERs) as an accessory guarantee for the transaction. In 2016, São Gonçalo Waste Treatment Plant, in São Gonçalo, state of Rio de Janeiro, was the second project under the Program of Activities (PoA) of the Clean Development Mechanism (CDM); it is related to Urban Waste (PoA Caixa) and aims to implement carbon project activities in landfills using an innovative approach in the medium to long term. In 2018, we report the 5th issuance of carbon credits, which are associated with methane gas flaring carried out by Santa Rosa and São Gonçalo landfills. The carbon credits were generated in 2017, and only after being audited by UNFCCC the issuance of credits was authorized in September 2018. In-house program Caixa promotes an integrated approach to all energy efficiency actions of the bank, with a focus on expense reduction and sustainable consumption. For this purpose, a total of R$ 140 million will be invested: R$ 50 million in the replacement of common light bulbs by LED bulbs, and an additional R$ 90 million in the deployment of photovoltaic panels. This investment pays itself back in three and a half years.
CenTrais elÉTRICas brasileiras s/a (eleTrobras)

**Emission reduction targets**

- **Absolute target: 1% reduction** of Scope 1+2 emissions (location-based) by 2021 from 2015 base year.
- **Is this a science-based target?** Yes, we consider this as a science-based target, but this target has not been approved by the initiative.
- **Intensity target: 1% reduction** of Scope 1+2 emissions (market-based) by 2021 from 2015 base year. Metric adopted for the target: Other, please specify: Metric tons CO₂e/MWh of generated energy.

**BEST PRACTICES:**

In 2018, we shut down 4 oil plants and 1 coal plant. As for renewable sources, we added 1 wind farm and 1 SHP. We reduced our coal generation by 6% and increased wind power by 8%. We have the goal of investing 9.5 billion BRL between 2015 and 2019 in generation projects from clean sources. In recent years, we have increased our share in sources with low emission of GHG in our installed capacity which, in 2018, represented about 95.2% of the total, decisively contributing to place the Brazilian electrical matrix as one of the cleanest and most renewable in the world.

**Initiatives in Mitigation & Investment in innovation**

Eletrobras has invested US$6,946,986 in 2 initiatives to mitigate emissions in 2018. The estimated impact of these initiatives is an emission reduction of 9,613,424 tCO₂e.

The initiatives addressed the following areas: Energy efficiency: Processes and Low-carbon energy installation.

Eletrobras is investing US$69,347,264 in 7 projects of low-carbon innovation to mitigate or adapt to Climate Change.

**Internal Price on Carbon**

In order to studying emission regulation, Eletrobras has adopted a shadow carbon price of US$ 20 related do scopes 1, 2 and 3.

**Business strategy and use of scenario analysis**

Eletrobras already integrates climate change issues into its business strategy. To that end, it uses climate scenario analysis to inform its decision making. In addition, it has already developed a plan to transition to a low-carbon economy.

**Risks & Opportunities related to climate change**

- **2 RISKS:** 1 transition risk and 1 physical risk
- **2 OPPORTUNITIES**
- **To manage risks and/or realize opportunities, the company is INVESTING US$ 66,988,037**

**Reasons for change (2017/2018):** Change in production
Companhia Energética Minas Gerais - Cemig

Emission reduction targets

- **Absolute target: 29% reduction** of Scope 1+2 emissions (location-based) by 2022 from 2017 base year.
- **Intensity target: 29% reduction** of Scope 2 emissions (location-based) by 2022 from 2017 base year. Metric adopted for the target: Other, please specify: Total losses in electricity transmission and distribution.
- **Is this a science-based target?** No, but we anticipate setting one in the next two years.

Initiatives in Mitigation & Investment in innovation

CEMIG has invested US$137,462,900,00 in 3 initiatives to mitigate emissions in 2018. The estimated impact of these initiatives is an emission reduction of 95,656 tCO\(_2\)e.

The initiatives addressed the following areas:
- **Energy efficiency:** Building services.

CEMIG is investing US$12,438,073 in 1 project of low-carbon innovation to mitigate and/or adapt to Climate Change.

Internal Price on Carbon

In order to studying emission regulation, promoting low carbon investments, identifying and seizing low carbon opportunities, CEMIG is adopting a shadow carbon price of US$ 6.54 related to scope 1.

Business strategy and use of scenario analysis

CEMIG already integrates climate change issues into its business strategy. To that end, it uses climate scenario analysis to inform its decision making. In addition, it has already developed a plan to transition to a low-carbon economy.

Risks & Opportunities related to climate change

- **4 RISKS**
  - 1 transition risk and 3 physical risks
- **3 OPPORTUNITIES**

To manage risks the company is investing US$547,542,352 and to realize opportunities the company is investing US$18,025,374,052

Reasons for change (2017/2018): Other activities of emission reduction

CEMIG makes ongoing efforts to identify climate-related opportunities, with a focus on development of new businesses related to low carbon economy. The company has an edge as it relies predominantly on renewable energy sources (97.6%); its greatest challenge in the long term lies in expanding generation capacity from renewables. In 2018, it launched the development of a Sustainability Plan, which identifies CEMIG’s main strategic drivers to enable long term sustainability. One of the priority themes laid out on the plan is the development of low-carbon and distributed generation businesses. Among ongoing actions, it is worth mentioning the creation of CEMIG SIM!, which will operate in the shared energy market through distributed generation, energy co-generation and storage, technology services, energy efficiency, street lighting and utilities management, electric mobility and consolidated bill services, among other activities. Another ongoing initiative is the analysis of the use of carbon credits from CDM projects, and the identification of new emission reduction projects.

Best Practices

CEMIG makes ongoing efforts to identify climate-related opportunities, with a focus on development of new businesses related to low carbon economy. The company has an edge as it relies predominantly on renewable energy sources (97.6%); its greatest challenge in the long term lies in expanding generation capacity from renewables. In 2018, it launched the development of a Sustainability Plan, which identifies CEMIG’s main strategic drivers to enable long term sustainability. One of the priority themes laid out on the plan is the development of low-carbon and distributed generation businesses. Among ongoing actions, it is worth mentioning the creation of CEMIG SIM!, which will operate in the shared energy market through distributed generation, energy co-generation and storage, technology services, energy efficiency, street lighting and utilities management, electric mobility and consolidated bill services, among other activities. Another ongoing initiative is the analysis of the use of carbon credits from CDM projects, and the identification of new emission reduction projects.
CPFL ENERGIA SA

Emission reduction targets

- **Absolute target**: 5% reduction of Scope 1 emissions by 2022, from 2016 base year.
- **No intensity target reported.**
- **Is this a science-based target?** No, but we anticipate setting one in the next two years.

Risks & Opportunities related to climate change

- **6 RISKS**
  - 2 transition risks and 4 physical risks
- **6 OPPORTUNITIES**

Initiatives in Mitigation & Investment in innovation

CPFL Energia has invested US$29,816,298 in 4 initiatives to mitigate emissions in 2018. The estimated impact of these initiatives is an emission reduction of 288,909 tCO₂e. The initiatives addressed the following areas: Low-carbon energy installation.

CPFL Energia is investing US$15,122,286 in 7 projects of low-carbon innovation to mitigate or adapt to Climate Change.

Internal Price on Carbon

In order to study emission regulation, promoting low carbon investments and identifying and seizing low carbon opportunities, CPFL Energia is adopting a shadow carbon price of US$15 related to scopes 1 and 2.

Business strategy and use of scenario analysis

CPFL Energia already incorporates climate change issues in their business strategy. To that end, it uses climate scenario analysis to inform its decision making. In addition, it has already developed a plan to transition to a low-carbon economy.

BEST PRACTICES:

In 2018, we concluded the Emotive project, one of the most complete evaluations of the impacts of electric mobility in Brazil. During five years, we built a comprehensive study with a business model for customer recharge infrastructure, to expand the number of electrical recharge stations and foster more electric vehicle users. The project included the installation of 25 electric charge stations (incl. 10 public ones) in Campinas, and the circulation of 14 electric cars. More than R$ 17 mi were invested in the study, which contributed to regulations by the ANEEL on recharging of cars and to the demystification of electric vehicles. It concluded that the Brazilian power sector is prepared to absorb the growth in energy demand through the increase of the number of electric vehicles circulating in the country. Tests show that, considering a 5% penetration rate of electric vehicles in the total fleet, 80% of existing distribution networks would not need any adjustments or additional investment. The project Electric Bus focuses on the monitoring and real-time connectivity of electric buses and charging station.
Emission reduction targets

- **Absolute target**: 4% reduction of Scope 1 emissions by 2021, from 2018 base year.
- **Is this a science-based target?** Yes, the absolute target is science-based.
- **Intensity target**: 28% reduction of Scope 1 emissions by 2021, from 2018 base year. Metric adopted for the target: Metric tons CO$_2$e per unit revenue.

Risks & Opportunities related to climate change

- **RISKS**
  - 1 transition risk and 2 physical risks
- **OPPORTUNITIES**
  - To manage risks and/or realize opportunities, the company is investing US$1,187,040

Initiatives in Mitigation & Investment in innovation

Itaú Unibanco Holding S.A. has invested US$34,510,392 in 5 initiatives to mitigate emissions in 2018. The estimated impact of these initiatives is an emission reduction of 312,748 tCO$_2$e. The initiatives addressed the following areas: Energy efficiency, Building services and Low-carbon energy installation.

Internal Price on Carbon

To navigate emission regulation, attend stakeholder expectations, drive low-carbon investment, identify and seize low-carbon opportunities, Itaú is adopting a shadow carbon price of US$ 3.61 related to scopes 1 and 2.

Business strategy and use of scenario analysis

Itaú already integrates climate change issues into its business strategy. To that end, it uses climate scenario analysis to inform its decision making.

BEST PRACTICES:

Our activities include the evaluation and observance of risks and opportunities for our clients, our businesses and society at large associated with climate change. Climate-related risks and opportunities may impact the analyses of credit, operational, reputation and market risks for financial institutions. Accordingly, the companies to which we provide credit and investments have been adapting to this new reality, and we are increasingly incorporating more and more of such issues into our analyses of both risks and opportunities. We favor comparability and materiality of climate disclosures across all business sectors; as a result, we are working to bring our climate change disclosures progressively in line with the recommendations by the Financial Stability Board (FSB) and the TCFD.
How Companies Have Been Contributing to the Paris Agreement   |   2019 Edition

**Emission reduction targets**

- **No absolute target reported.**
- **Intensity target:** To reduce Scope 1 emissions to 18% below 2012 levels by 2018. Metric adopted for the target: tCO$_2$e/t transported.
- **Is this a science-based target?** Yes, the intensity target is regarded as a science-based target, but this target has not been approved by the initiative.

**Risks & Opportunities related to climate change**

Grupo Boticário has not reported risks related to climate change. In addition, it has not reported any climate-related opportunities.

**Initiatives in Mitigation & Investment in innovation**

Grupo Boticário has not reported any emission reduction initiatives. Grupo Boticário has not reported any investments in low-carbon innovation projects.

**Internal Price on Carbon**

In order to promote low carbon investments, Grupo Boticário is adopting a shadow carbon price of US$11 related to scopes 1 and 2.

**Business strategy and use of scenario analysis**

Grupo Boticário already integrates climate change issues into its business strategy.

**BEST PRACTICES:** Through the work of its Foundation for Nature Protection, Grupo Boticário contributes to the achievement of the Paris Agreement goals, by supporting the creation of public and private Conservation Units, funding scientific research on conservancy of natural areas and protection of endangered species, and fostering the use of economic tools that promote the conservation of biodiversity. In 2018, we supported the creation of 18 new Conservation Units, which total 11.5 million hectares under protection. We have also worked in engaging and raising awareness in society on the need for environmental conservation as well as in supporting public policies that enable a more resilient society through Nature-based Solutions.
Emission reduction targets

- **Absolute target**: 20% reduction of Scope 1 + 2 emissions (location-based) + 3 (upstream) by 2021 from 2017 base year.
- **No intensity target reported**.
- **Is this a science-based target?** Yes, we consider the absolute target as a science-based target, but this target has not been approved by the initiative.

Initiatives in Mitigation & Investment in innovation

Lojas Renner S.A. has invested US$1,648,936 in 4 initiatives to mitigate emissions in 2018. The estimated impact of these initiatives is an emission reduction of 5,121 tCO₂e.

The initiatives addressed the following areas:
- Energy efficiency: Building services, Low-carbon energy installation and Low-carbon energy purchase.

Internal Price on Carbon

In order to meet interested parties’ expectations, Renner Stores adopt an internal carbon price of US$ 1 through the compensation approach, applied to scopes 1 and 2.

Business strategy and use of scenario analysis

Lojas Renner already integrates climate change issues into its business strategy. To that end, it uses climate scenario analysis to inform its decision making.

BEST PRACTICES:

We have worked to expand our renewable sources of energy and therefore meet our public commitment of 75% **energy consumption coming from low impact, renewable sources** (considering only sourced energy) by 2021. For this purpose, we have invested in purchasing energy coming from small hydroelectric plants on the free market, as well as in solar and wind power generation. In 2017, we launched a pilot project of solar power generation and today we have it in 8 shops in RJ, DF and RS. In 2018, a wind power generation project was started to supply energy to a large number of stores.

In 2018, the ratio of energy coming from low impact renewable sources was 37%. We have achieved a **90.6% ratio of renewables** to total energy consumption in our operations.

Since 2015, we have obtained significant energy efficiency gains through initiatives that promote technical improvement and smarter use of the infrastructure of Renner’s stores to seize opportunities for consumption reduction. Presently, **100% of Renner stores are fitted with LED bulbs**, which are 80% more economical than incandescent light bulbs and 30% more than fluorescent lighting; 98 stores (29% of total Renner stores) are equipped with remote consumption monitoring systems, which enable agile identification and solution of problems and the achievement of target efficiency levels. We are also retrofitting water cooling systems in air conditioning units in order to achieve even greater efficiency.
NATURA COSMÉTICOS SA

Emission reduction targets

- **Absolute target: 8% reduction** of Scope 1 + 2 emissions (location-based) by 2021 from 2015 base year.
- **Is this a science-based target?** Yes, we consider the absolute target as a science-based target, but this target has not been approved by the initiative.
- **Intensity target: 33% reduction** of Scope 1 + 2 emissions (location-based) + 3 (upstream and downstream) by 2020 from 2012 base year. Metric adopted for the target: kg CO₂e/kg of invoiced product.

<table>
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<tr>
<th>Year</th>
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<tbody>
<tr>
<td>2016</td>
<td>6,521</td>
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<tr>
<td>2017</td>
<td>7,276</td>
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<tr>
<td>2018</td>
<td>9,586</td>
</tr>
</tbody>
</table>

Reasons for change (2017/2018): Other

Risks & Opportunities related to climate change

- **13 RISKS**: 8 transition risks and 5 physical risks
- **10 OPPORTUNITIES**

Initiatives in Mitigation & Investment in innovation

Natura has invested in **19 initiatives** to mitigate emissions in 2018. The estimated impact of these initiatives is an emission reduction of **16,466 tCO₂e**.

The initiatives addressed the following areas: Energy efficiency and emission reduction in processes and products.

Internal Price on Carbon

In order to change internal behavior, foster energy efficiency, low carbon investments and identify and take advantage of low carbon opportunities, as well as supplier engagement; Natura uses an internal carbon price **US$ 73.29** applied to scopes 1, 2 and 3. The price is based on Natura’s own methodology, EP&L (Environmental Profit & Loss).

Business strategy and use of scenario analysis

Natura already includes climate change issues into their business strategy. To that end, it uses climate scenario analyses to support their decision making.

BEST PRACTICES:

We created in 2007 the **Carbono Neutro Natura program** to promote the continuous reduction of our overall GHG emissions across all production chain; emissions not yet avoided are neutralized through projects that generate positive socio-environmental impacts and preferably are located in the Pan-Amazon region. The Program was the first public commitment taken up by Natura to reduce GHG emissions from our activities. The first target of the program set a **33% reduction in relative emissions** by 2013, which was achieved and gave place to a new target of reducing emissions by another 33% in relation to 2012 emission levels by 2020. Because of this program, in 2019, Natura was one of the winners of the 2019 UN Global Climate Action Award in the Climate Neutral Now category.
**Emission reduction targets**

- **Absolute target**: To reduce Scope 1 + 2 + 3 emissions to 20% below 2017 levels by 2030.
- **Is this a science-based target?** Yes, both targets have been approved as science-based by the Science-Based Targets initiative (SBTi). The intensity target uses scenario 450 by the International Energy Agency.
- **Intensity target**: Grupo Iberdrola has a global target of reducing Scope 1 emissions by 50% in comparison to 2007 levels by 2030. Metric adopted for the target: Metric tons CO₂e per megawatt hour (MWh)*.

**Initiatives in Mitigation & Investment in innovation**

The company reports only at world level for Iberdrola Group. Neoenergia is investing US$ 6,825,723,044.42 in 2 low-carbon innovation projects.

**Internal Price on Carbon**

Neoenergia does not adopt internal carbon pricing yet, and Iberdrola Group works with an internal price of US$ 34.45*.

*30 euros

**Business strategy and use of scenario analysis**

Neoenergia, as part of Iberdrola Group, already integrates climate change issues into its business strategy. To that end, it uses climate scenario analysis to inform its decision making. In addition, it has already developed a plan to transition to a low-carbon economy.

Neoenergia accounted for 12.5% of Iberdrola Group’s EBITDA in 2018.

**BEST PRACTICES:**

Neoenergia will complete in 2019 its hydroelectric generation park with 3GW installed capacity. The company has tripled its wind power capacity in two years.

DSO Atibaia: Technological Platform of Distributed Energy Resources.

Neoenergia prioritizes the use of cleaner fuels in its flex-fuel vehicle fleet across the four utilities of the group.
**SUZANO S/A**

**Emission reduction targets**

- **Is this a science-based target?** The target currently under development will be submitted to assessment.

**Risks & Opportunities related to climate change**

2 risks

1 opportunity

To manage risks and/or realize opportunities, Suzano is **investing** in knowledge and articulation with industry associations, social movements and governments to minimize risks from regulatory transition; it also invests in research and industrial and forest operations aimed at decreasing exposure to the physical risks associated with extreme droughts.

**Initiatives in Mitigation & Investment in innovation**

Suzano has invested in the development of lighter and larger trucks for wood hauling, as well as of tunnels and long combination vehicles to reduce emissions from wood hauling. It invested in slurry drying and co-firing in boilers, reducing emissions from landfills, which are much higher than emissions arising from burning cement raw material slurry. The company has developed a program to offset carbon emissions from the production of fluff pulp (raw material for diapers and sanitary pads), based on LCA and carbon sequestering from restoration areas in the Atlantic Forest. The initiatives addressed the following areas:

- Energy efficiency: Processes of wood hauling
- Installation of low carbon energy generation by biomass co-firing
- Offset of carbon emissions from fluff pulp production

**Internal Price on Carbon**

In order to apply in risk simulations and CAPEX valuation, Suzano adopts an internal carbon price, through a shadow price approach, in the amount of US$ 10.00 applied to scopes 1, 2 and 3.

**Business strategy and use of scenario analysis**

Suzano already integrates **climate change** issues into its business strategy. For this purpose, it applies climate scenario analysis to inform decision making on investments in research and forest operations. In addition, the company is developing its climate change strategy and long-term targets. Suzano already issued carbon inventories from 2002 until 2018 and emission projections until 2030.

**BEST PRACTICES:**

Considering Suzano’s integrated nature of its activities, that is to say, the growing of eucalyptus trees integrated with restoration and conservation of natural areas, and the use of eucalyptus trees to produce pulp and paper, which are by definition renewable and recyclable products. Even though residual GHG emissions persist in the production processes, the benefits from carbon sequestering and storage in forests have been generated in large scale for many years. To get an idea of the order of magnitude, during the last 10 years, Suzano has removed approximately 80 million tons of CO₂ per year from the atmosphere, after deducting the emissions for the same period, which has generated net negative emissions, contributing immediately to reduce the GHG concentration levels on the atmosphere. Therefore, the analysis of the company’s climate performance must take into consideration not only the gross emission figures reported above, but also emissions and removals, following the same evaluation criteria adopted for international commitments under the Paris Agreement. That is to say, the Agreement itself was structured on the notion of balance. Suzano has been working at the institutional level for the improvement of corporate disclosure platforms, so they demonstrate in a clearer and more objective manner an integrated climate performance.
**Emission reduction targets**

- **Global target** of **26% reduction** of emission intensity (scopes 1 and 2) per square meter by 2022 and **52%** by 2030 from 2013 year base.
- **Is this a science-based target?** Yes.

**Initiatives in Mitigation & Investment in innovation**

Ticket Log has invested **US$ 1,320,681.46** between 2018 and 2019 (year to date) in the development of 10 solutions for a low carbon economy considering internal and external impacts, to mitigate or adapt to climate change. The estimated impact of these initiatives is an emission reduction of **14,158 tCO₂e** considering the company’s operation and value chain.

The initiatives addressed the following areas: **Energy efficiency: Building services and Process emissions reductions.**

**Internal Price on Carbon**

Ticket Log has not yet adopted an internal price on carbon.

**Business strategy and use of scenario analysis**

Ticket Log already integrates climate change issues into its business strategy.

**BEST PRACTICES:**

A pioneer in the market, Ticket Log has been investing during the years in innovation and technology for the development of solutions towards a low carbon economy in line with its global sustainability strategy. Internally, we highlight the server virtualization through cloud technology. For the market, two initiatives stand out: the Program of Carbon Credits and Plataforma Compense (Platform Compensate). The Program of Carbon Credits, certified by Verified Carbon Standard - VCS, encourages clients to make a switch from fossil fuels to renewables for flex vehicles in their fleets, which generates carbon credits in the voluntary market. And with the Platform, a website for carbon credit trade launched in 2018, Ticket Log clients are incentivized to offset emissions from their fleets and even from other sources. Additionally, Ticket Log has participated in the Brazilian GHG Protocol Program for 9 years, voluntarily publishing its annual Greenhouse Gas inventory in the Public Register of Emissions. Due to the reporting of all scopes and having your inventory checked by an independent third party, it is recognized with the Gold Seal.
**VEDACIT**

**Emission reduction targets**

- No absolute or intensity target reported.

**Risks & Opportunities related to climate change**

Vedacit has not reported risks related to climate change. In addition, it has not reported any climate-related opportunities.

**Initiatives in Mitigation & Investment in innovation**

Vedacit has not reported any emission reduction initiatives. Vedacit has not reported any investments in low-carbon innovation projects.

**Internal Price on Carbon**

Vedacit has not yet adopted an internal price on carbon.

**Business strategy and use of scenario analysis**

Vedacit does not integrate climate change issues into its business strategy.

**BEST PRACTICES:**

Vedacit has implemented energy efficiency projects (listed below) that result in GHG emission reduction.

- Negotiation to procure electricity from renewable sources;
- Internal guidance on the use of ethanol by vehicle fleet (business travels);
- Replacement of manufacturing plant equipment at one of the company’s sites to increase energy efficiency (ongoing);
- Use of LED bulbs in all office areas.

**Emission (tCO\(_2\)e)**

<table>
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<th>Emission (tCO(_2)e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>-</td>
</tr>
<tr>
<td>2017</td>
<td>-</td>
</tr>
<tr>
<td>2018</td>
<td>1,945</td>
</tr>
</tbody>
</table>

Reasons for change (2017/2018): First year of reporting
Emission reduction targets

- **Absolute target: 50% reduction** of Scope 1+2 emissions (market-based) by 2025 from 2015 base year and **70% reduction** of emissions by 2030 and achievement of carbon neutrality by 2050; 85% increase in renewable energy use by 2025 and 100% by 2030.

- **Intensity target: 85% reduction** of energy consumption per traffic unit by 2025. Metric adopted for the target %/traffic unit.

- **Is this a science-based target?** Yes, both targets are science-based but only the absolute target was approved by the initiative.


Emission (tCO₂e)

- 2016: 158,418
- 2017: 101,785

Initiatives in Mitigation & Investment in innovation

Vivo has invested in **2 initiatives** to mitigate emissions in 2018. The estimated impact of these initiatives is an emission reduction of 70%. The initiatives addressed the following areas: Fugitive emissions reductions and Low-carbon energy purchase. Vivo has not reported any investments in low-carbon innovation projects.

Risks & Opportunities related to climate change

3 RISKS*

*1 transition risk and 2 physical risks

3 OPPORTUNITIES

Internal Price on Carbon

Vivo has not yet adopted an internal price on carbon.

Business strategy and use of scenario analysis

Vivo already integrates climate change issues into its business strategy. To that end, it uses climate scenario analysis to inform its decision making.

BEST PRACTICES:

Telefónica works with an Energy Efficiency Plan: we have replaced liquid cooling systems with dry systems, and issue low-carbon purchasing instruction that prioritize efficient electric equipment and air conditioning with lower GHG emissions.

We also made a global commitment (targets) for reducing GHG emissions that are incorporated into the company’s bonus plan for managers.

In 2019, we use **100% renewable energy**, reaching the target set 12 years ago.

We calculate our positive impact: the use of our products and services has avoided **119.5 thousand tons of CO₂** emissions by our clients in 2017, and 120.9 thousand tons in 2018.
Emission reduction targets

- **Absolute target**: 25% reduction of Scope 1 emissions by 2020, from 1990 base year.
- **Intensity target**: 25% reduction of Scope 1 emissions by 2020, from 1990 base year. Metric adopted for the target: Metric tons CO$_2$e per metric ton of cement.
- **Is this a science-based target?** No, but we have joined the industry in publishing the Cement Technology RoadMap Brazil, in which the cement sector makes a commitment with reduction targets until 2050 aligned with the 2°C commitment.

Risks & Opportunities related to climate change

- **Transition Risks**
- **Opportunities**

Initiatives in Mitigation & Investment in innovation

Votorantim Cimentos has invested US$ 9,532,902 in 2 initiatives to mitigate emissions in 2018. The estimated impact of these initiatives is an emission reduction of 409,995 tCO$_2$e.

The initiatives addressed the following areas: Investment in systems to increase the replacement of fossil fuels for waste and also in a number of energy efficiency initiatives.

Votorantim Cimentos is investing US$ 21,075,443 in 2019 in 2 projects of low-carbon innovation to mitigate or adapt to Climate Change.

Internal Price on Carbon

In order to study emission regulation, change internal behavior; foster energy efficiency and low-carbon investments, as well as identifying and leveraging low-carbon opportunities, Votorantim Cimentos uses an internal carbon price of US$10 of the shadow price applied to scope 1 and 2.

Business strategy and use of scenario analysis

Votorantim Cimentos already integrates climate change issues into its business strategy. To that end, it uses climate scenario analysis to inform its decision making. In addition, it has already developed a plan to transition to a low-carbon economy.

Best Practices:

Votorantim Cimentos introduced an internal carbon price of US$ 10/tCO$_2$e in the main CAPEX projects submitted to approval. With the use of future carbon regulation scenarios, the analysis enables a long-term vision on investment feasibility, preventing cases of future value loss or advancement of high future value projects. This year, we announced an investment of R$ 200 million on our unit in Pecém (CE), it was submitted to a carbon impact assessment that demonstrated its attractiveness in a carbon pricing scenario. The project aims to increase the plant’s 800,000 ton cement capacity using slag and reducing emissions of CO$_2$ per ton of cement by 15% on average.

Our unit in Primavera (PA) started to use açai berry waste as a substitute for imported petroleum coke. The pits (83% of the fruit’s volume) are processed, prepared and stored for energy production. In 2018, we used 40,000 tons of açai berry pits, resulting in 14.3% of thermal substitution and reducing emissions by 48,000 tons of CO$_2$/year.
Next, cases from companies that only reported their data globally, with no specific numbers for Brazil, are presented.

**ARCELORMITTAL**

**Business strategy and use of scenario analysis**

ArcelorMittal already integrates climate change issues into its business strategy. ArcelorMittal's Climate Action Report published in May 2019 details the company's strategy to transition to low carbon steel production. Acknowledging that scarce availability of scrap metal makes this an insufficient production path to meet the demand for steel, different possible technological routes are undergoing assessment as potential solutions to enable significant reductions of the carbon footprint of steel production, including: circular carbon uses, carbon capture and storage (CCS), and use of hydrogen produced by clean energy sources.

ArcelorMittal has also worked to drive circularity of steel use: the Steligence program aims to evaluate solutions to optimize the carbon footprint in the building industry, and the S-in-motion program addresses the development of heavy duty steels that reduce the weight of vehicles, thereby reducing energy and fuel consumption for mobility solutions.

In Brazil, ArcelorMittal units maintain a longstanding connection to the tackling of climate change. In 2005, ArcelorMittal Tubarão was the first large scale steel plant in the world to report a Clean Development Mechanism - CDM project: electricity co-generation with the recovery of gas as by-product of steel production in oxygen furnace. In 2011, a second CDM project by this unit was reported: Electricity Generation by Coke Production Heat Recovery. By 2017, the two projects generated emission reduction credits of over 2.5 MtCO₂e. The unit of Tubarão is currently electricity self-sufficient and is planning the implementation of ISO 50001 to enhance and consolidate efficient energy management in 2020.

In addition, in Brazil ArcelorMittal also carries out steel production using charcoal, produced from biomass of sustainable forests certified by the Forest Stewardship Council (FSC). Carbon from reforested biomass follow a circular cycle, generating steel that may be considered as carbon neutral.
HEINEKEN NV

**BEST PRACTICES:** We have a diverse carbon footprint, including energy use in breweries, transport of raw materials and products, points of sale, beverage cooling and packaging. For our operations, we set global targets for 2030 of reaching 70% of energy consumption from renewable sources (electric and thermal, and 80% reduction in emissions). The HEINEKEN Group in Brazil has opened in 2019 its largest wind farm worldwide in Acaraú, state of Sergipe. With a generation capacity of 112 thousand MWh, the 14 turbines will generate 33% of the electricity used by our 15 breweries in the country. Approximately R$ 200 million were invested to generate emission reductions of 12 thousand tons of CO₂. In relation to thermal energy, there are currently 5 biomass boilers in activity, and in 2019 works were started for additional installations in Benevides, state of Pará. Our forecasts indicate that by 2023 we will reach 100% renewable energy use in our breweries, using biomass of wood chips sourced from certified reforestation.

SCHNEIDER ELECTRIC

**BEST PRACTICES:** We have created an integrated solution by applying all our expertise in creating energy acquisition strategies focused on decarbonization and on our own IOT solutions and analytical software for manufacturing management, industrial and building automation, and energy management. In addition, we use augmented reality, applied to our factories, distribution centers and offices, resulting in a reduction of approximately 5% of global energy consumption.

We developed our own analytic software solutions, purchase energy from the free market, measure and manage energy on real time, and use augmented reality in our plants, distribution centers and offices. The initiative is part of a global project that resulted in approximately 5% reduction in electricity consumption.

We have launched a project for the use of electric vehicles and bicycles for urgent and short distance deliveries. The key objective is the decarbonization of emissions related to product delivery within the metropolitan area of São Paulo.

We have developed retrofit solutions to extend product life cycle as well as digital service solutions for asset monitoring, in order to optimize performance and energy use.

We launched a medium voltage switchgear technology that eliminates the use of SF6. Its widespread adoption may generate an impact equivalent to removing 100 mi combustion vehicles from circulation, reducing yearly emissions by 350 mi tons of CO₂e.
VESTAS WIND SYSTEMS A/S

BEST PRACTICES: Since 2010, Vestas defined targets for two essential parameters to reduce the environmental impact of wind turbines: carbon footprint and waste. The product carbon footprint over the lifetime of a Vestas wind turbine has been reduced significantly since 2010. The current target is a 10% reduction of carbon footprint by 2020 from a baseline of 6.60 grams CO₂/kWh in 2017.

The current target for product waste is a 7% reduction by 2020 versus a baseline of 0.178 grams waste per kWh in 2017. Progress is documented when new wind turbine versions are released. Around 83-89% of a Vestas wind turbine is recyclable, depending on turbine type. On the road to achieving 100% recyclability, the composite materials of the blades comprise the largest component yet to be made recyclable. To address this issue, Vestas continues to work in the DreamWind project (Designing Recyclable Advanced Materials for Wind Energy) that aims at developing new sustainable composite materials for blades.

SHELL

BEST PRACTICES: We are adjusting our businesses to meet changing demand in different countries by adapting the products we offer to match the different needs of our customers. Meeting our Net Carbon Footprint ambition requires evolving our portfolio over the medium to longer term. An example of business opportunities and solutions for managing and reducing GHG emissions: NE explores emerging opportunities linked to the energy transition and invests in those where we believe sufficient value is available. Until 2020, Shell plans to invest US$1-2 billion per year, on average, in New Energies (New Fuels/Power). This is expected to increase to US$2-3 billion per year from 2021 to 2025 in Power; the Power investment scale-up is subject to be on track to be self-funding by 2030, investments hitting agreed financial milestones, and on-stream integrated power business demonstrating 8-12% returns. We focus on new fuels for transport, such as advanced biofuels, hydrogen and charging for battery-electric vehicles; and power, including from low-carbon sources such as wind and solar as well as natural gas.
CONCLUSION

We are faced with a great challenge, but also with the greatest opportunity of the century, as the new economy may be built upon solutions that limit emissions and pull more carbon out of the atmosphere. In the “Our Carbon Future” report, experts from Volans argue that these solutions would help to pave the way towards a regenerative new economy, capable of reversing the climate crisis and, at the same time, delivering economic prosperity for the people. According to them, addressing this double challenge requires a radical shift in the way we use carbon to create economic value. Under this new economy, carbon becomes a positive productivity metric, making room for a wealth of innovation and business opportunities.

In view of this scenario, companies operating in Brazil should advance the integration of climate change issues into their business strategies, embarking on a journey that starts with a diagnosis provided by emissions inventories, assessment of risks and opportunities, measurement of financial impacts, target and goal setting, alongside public policies and/or commitments.

Organizations will increasingly need to seek innovation within their business models, asking themselves what is the nature of their activity and what are the needs being met by their products and services. This way, they will find a model under which they can operate and prosper while assisting to address the great challenges facing humankind, of which the climate crisis is the most chronic and transversal of them all.

This requires moving beyond the achievement of efficiency in production, and ultimately being able to grasp which are the impacts across the entire life cycle of products and services. It raises the bar of environmental performance to a whole different level. In order to achieve this, companies will have to reflect on whether their actions are reaching scale in their sectors and in the economy as a whole.

This challenge is fully expressed in Sustainable Development Goal 9: “build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation”. Accordingly, it proposes that businesses must drastically reduce GHG emissions from their operations and encourage their suppliers to do likewise.

The results of this report pinpoint a clear business justification to drive investment in research and development of solutions that reduce emissions and pull carbon out of the atmosphere. Combined with the declining trend of the Brazilian reference interest rate, there is a more suitable environment for investments of this kind. These solutions will become increasingly strategic for the competitiveness of nations and companies on the path towards a decarbonized economy.

When we analyze the character of emissions reduction projects implemented by companies, we identify a prevalence of projects of efficient energy use (46%), and emissions reduction in processes (22%).

In addition to energy efficiency actions, there are other major areas mapped by a CEBDS study entitled “Opportunities and Challenges of the Brazilian NDC Commitments” that are not yet being addressed, especially those that require stronger inter-sectoral articulation and investment.16

We cite as example opportunities arising from waste reuse as raw material in different production lines and the redesign of processes and products aiming at a circular economy, which may generate huge revenue gains in the long term.

We also highlight the existing opportunities associated with the necessary infrastructure for a low-carbon industry, such as increased access to less carbon-intensive fuels and integration of freight transport modes; such actions would generate positive externalities to the whole private sector.

The transportation sector alone has a potential of 2.05 billion tCO₂e reduction at an estimated cost of R$ 202 billion by 2050 (Borba et al., 2016).17 The mobilization of such a large volume of capital will demand an articulation between the public and private sectors; new funding (green bonds) and regulation instruments (carbon pricing) may contribute to the internalization of carbon costs in investment decision making by private agents, as indicated by the CEBDS study published in 2017.

Moreover, there is an ongoing effort by a group of sectoral entities and regulators of the financial sector, united in the Laboratory of Financial Innovation (LAB), to increase credit supply and investment, and to mobilize capital in scale for the transition towards a decarbonized economy.

Accordingly, we share some recommendations to contribute to boost the resilience and competitiveness of businesses in the light of changes brought about by climate change. The recommendations are:

1. **Measure and report climate-related financial impacts (both positive and negative)** to ensure the longevity of the business;

2. **Manage GHG emissions** from operations and encourage suppliers to do the same;

3. **Drive continuous investment** in emissions reduction and the development of solutions that contribute to capture carbon from the atmosphere;

4. **Foster partnerships for investment in the decarbonization of the economy** through continued dialogue among peers, government representatives and law-makers, as to take climate issues into consideration in the planning and investment in strategic areas such as infrastructure;

5. **Establish long-term, science-based targets** aimed at emissions reduction in order to contribute towards the goals of the Paris Agreement and, at the same time, promote innovation so businesses may adapt to technological and consumer behavior changes;

6. **Seek innovation in the business models** contributing to scale solutions to reverse the climate crisis, such as circular/regenerative economy, biodiversity-based businesses, nature-based solutions, and the like.

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## ANNEX 1

**List of analysed companies in this study**

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>SECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES Tiete Energia SA</td>
<td>Renewable power generation</td>
</tr>
<tr>
<td>Alcoa Corp.</td>
<td>Metal casting, refining and forming</td>
</tr>
<tr>
<td>Ambev S.A.</td>
<td>Food &amp; beverage processing</td>
</tr>
<tr>
<td>Anglo American</td>
<td>Coal mining</td>
</tr>
<tr>
<td>Azul Sa</td>
<td>Air transport</td>
</tr>
<tr>
<td>B2W Companhia Global do Varejo</td>
<td>Discretionary retail</td>
</tr>
<tr>
<td>Banco Bradesco S/A</td>
<td>Financial services</td>
</tr>
<tr>
<td>Banco BTG Pactual SA</td>
<td>Financial services</td>
</tr>
<tr>
<td>Banco do Brasil S/A</td>
<td>Financial services</td>
</tr>
<tr>
<td>Banco Santander Brasil</td>
<td>Financial services</td>
</tr>
<tr>
<td>Barry Callebaut AG</td>
<td>Food and beverage processing</td>
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<td>Braskem S/A</td>
<td>Chemicals</td>
</tr>
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<td>BRF S.A.</td>
<td>Food &amp; beverage processing</td>
</tr>
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<td>Caixa Econômica Federal</td>
<td>Financial services</td>
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<tr>
<td>Centrais Elétricas Brasileiras S/A (ELETROBRAS)</td>
<td>Thermal power generation</td>
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<tr>
<td>Centrais Elétricas de Santa Catarina SA CELESC</td>
<td>Renewable power generation</td>
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<td>Cia Paranaense de Energia - COPEL</td>
<td>Energy utilities network</td>
</tr>
<tr>
<td>Cia Saneamento de Minas Gerais - COPASA</td>
<td>Non-energy utilities</td>
</tr>
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<td>Cia. Brasileira de Distribuição (CBD) Grupo Pão de Açúcar</td>
<td>Convenience retail</td>
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<td>Cielo SA</td>
<td>Specialized professional services</td>
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<td>Companhia Energética Minas Gerais - CEMIG</td>
<td>Thermal power generation</td>
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<td>Corbion</td>
<td>Food &amp; beverage processing</td>
</tr>
<tr>
<td>COSAN S.A. Indústria e Comércio</td>
<td>Oil and gas processing</td>
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<tr>
<td>CPFL Energia SA</td>
<td>Thermal power generation</td>
</tr>
<tr>
<td>Duratex S/A</td>
<td>Wood &amp; rubber products</td>
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<td>Ecorodovias Infraestrutura e Logística S.A.</td>
<td>Land &amp; property ownership &amp; development</td>
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<td>Enel Distribuição São Paulo</td>
<td>Energy utilities network</td>
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<tr>
<td>Fleury S.A.</td>
<td>Other services</td>
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<td>Company Name</td>
<td>Industry</td>
</tr>
<tr>
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<tr>
<td>Fuji Oil Holdings Inc.</td>
<td>Food &amp; beverage processing</td>
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<td>Grupo Boticário</td>
<td>Chemicals</td>
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<td>Grupo CCR</td>
<td>Land &amp; property ownership &amp; development</td>
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<td>Ingedrid Incorporated</td>
<td>Food &amp; beverage processing</td>
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<td>Itausa Investimentos Itaú S.A.</td>
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<td>Japan Tobacco Inc.</td>
<td>Tobacco</td>
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<tr>
<td>JBS S.A.</td>
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<tr>
<td>Klabin S/A</td>
<td>Paper products &amp; packaging</td>
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<td>Light SA</td>
<td>Energy utilities network</td>
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<td>Lojas Americanas S/A</td>
<td>Discretionary retail</td>
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<tr>
<td>Lojas Renner S.A.</td>
<td>Discretionary retail</td>
</tr>
<tr>
<td>Marfrig Global Foods S/A</td>
<td>Fish and animal farming</td>
</tr>
<tr>
<td>MRV Engenharia e Participações</td>
<td>Construction</td>
</tr>
<tr>
<td>Natura Cosméticos SA</td>
<td>Chemicals</td>
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<tr>
<td>Neoenergia</td>
<td>Thermal power generation</td>
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<tr>
<td>Oi S.A.</td>
<td>Media, telecommunications &amp; data center services</td>
</tr>
<tr>
<td>Philip Morris International</td>
<td>Tobacco</td>
</tr>
<tr>
<td>Raia Drogasil SA</td>
<td>Convenience retail</td>
</tr>
<tr>
<td>Raizen</td>
<td>Trading, wholesale, distribution, rental &amp; leasing</td>
</tr>
<tr>
<td>Rio Paranapanema Energia S.A.</td>
<td>Renewable power generation</td>
</tr>
<tr>
<td>Sul América S/A</td>
<td>Financial services</td>
</tr>
<tr>
<td>Suzano S.A.</td>
<td>Paper products &amp; packaging</td>
</tr>
<tr>
<td>Telefonica Brasil S.A. (Vivo)</td>
<td>Media, telecommunications &amp; data center services</td>
</tr>
<tr>
<td>Ticket log</td>
<td>Commercial &amp; consumer services</td>
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<td>Tim Participações S.A.</td>
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<tr>
<td>Ultrapar Participações S/A</td>
<td>Chemicals</td>
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<td>Valid Soluções SA</td>
<td>Print &amp; publishing services</td>
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<td>Vedacit</td>
<td>Chemicals</td>
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<td>Via Varejo</td>
<td>Discretionary retail</td>
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<td>Votorantim Cimentos</td>
<td>Cement &amp; concrete</td>
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<td>Weg S/A</td>
<td>Powered machinery</td>
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<td>REFERENCE</td>
<td>QUESTION</td>
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<td>-----------</td>
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</tr>
<tr>
<td>C2.3a</td>
<td>Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.</td>
</tr>
<tr>
<td>C2.4a</td>
<td>Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.</td>
</tr>
<tr>
<td>C3.1</td>
<td>Are climate-related issues integrated into your business strategy?</td>
</tr>
<tr>
<td>C3.1a</td>
<td>Does your organization use climate-related scenario analysis to inform your business strategy?</td>
</tr>
<tr>
<td>C3.1b</td>
<td>Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.</td>
</tr>
<tr>
<td>C3.1d</td>
<td>Provide details of your organization’s use of climate-related scenario analysis.</td>
</tr>
<tr>
<td>C3.1e</td>
<td>Disclose details of your organization’s low-carbon transition plan.</td>
</tr>
<tr>
<td>C4.1</td>
<td>Did you have an emissions target that was active in the reporting year?</td>
</tr>
<tr>
<td>C4.1a</td>
<td>Provide details of your absolute emissions target(s) and progress made against those targets.</td>
</tr>
<tr>
<td>C4.1b</td>
<td>Provide details of your emissions intensity target(s) and progress made against those target(s).</td>
</tr>
<tr>
<td>C4.3</td>
<td>Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.</td>
</tr>
<tr>
<td>C4.3a</td>
<td>Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO₂e savings.</td>
</tr>
<tr>
<td>C4.3b</td>
<td>Provide details on the initiatives implemented in the reporting year in the table below.</td>
</tr>
<tr>
<td>C6.1</td>
<td>What were your organization’s gross global Scope 1 emissions in metric tons CO₂e?</td>
</tr>
<tr>
<td>C6.3</td>
<td>What were your organization’s gross global Scope 2 emissions in metric tons CO₂e?</td>
</tr>
<tr>
<td>C7.9</td>
<td>How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?</td>
</tr>
<tr>
<td>C7.9a</td>
<td>If there was any change in your gross global emissions (Scope 1 and 2 combined), identify the reasons for this change(s) and for each of them specify how your emissions compare to the previous year.</td>
</tr>
<tr>
<td>C9.6</td>
<td>Disclose your investments in low-carbon technology</td>
</tr>
<tr>
<td>C11.3</td>
<td>Does your organization use an internal price on carbon?</td>
</tr>
<tr>
<td>C11.3a</td>
<td>Provide details of how your organization uses an internal price on carbon.</td>
</tr>
</tbody>
</table>
ANNEX 3
GLOSSARY

Fugitive Emissions: greenhouse gas emissions that occur due to leaks and other unintended releases.

Scope 1: greenhouse gas emissions from the direct activities of companies.

Scope 2: greenhouse gas emissions associated with use of electricity and vapor.

Scope 3: greenhouse gas emissions associated with indirect activities of companies linked to the value chain.

Emissions Reduction Initiatives: projects implemented by companies that generate reduction in their greenhouse gas emissions.

Absolute Target: target for reduction of greenhouse gas emissions that states an absolute reduction figure.

Science-based Target: target that, considering the company’s activities, contribute to limit global warming to below 2°C.

Intensity Target: target for reduction of greenhouse gas emissions that states a relative reduction figure, that is, emissions against a certain business indicator (e.g. reduce scope 1 emissions per unit of product).

Process Optimization: rearrangement of elements within a certain process that results in optimal resource use and/or emissions reduction.

Internal Price on Carbon: tool that supports decision making by attributing a monetary value to greenhouse gas emissions.

Implicit Price: abatement costs/purchases divided by tons of CO$_2$e. This calculation helps to quantify the capital investments required to meet climate targets, and it is frequently used as reference for the adoption of a strategic internal price on carbon.

Shadow Price: hypothetical cost of each ton of CO$_2$e, used as a tool to reveal risks and opportunities hidden in the company’s operating and supply chain, and to support strategic decision making related to investments in the futures market.

Energy Efficiency Projects: projects that aim to promote an increased efficiency in the use of resources related to generation and/or consumption of electricity.

Low-carbon Energy Project: projects that implement or increase the application of net zero emission technologies or significantly lower emissions than other carbon intensive sources.

SBTi - Science Based Targets Initiative: organization dedicated to helping companies to establish science-based targets.

Internal fee: type of internal price on carbon that consists of a fee imposed on every area of a company according to their emissions, which generates a fund for sustainable initiatives.

tCO$_2$e: greenhouse gas emission unit that unifies the warming potential of all gases under a carbon equivalence.