Briefing - Environmental Compliance Findings Related to Sugar Production by Copersucar and Raízen (2020–2025)

Written for Foodrise, December 2025

Methodology

In order to reach the findings in this briefing, the consultant adopted the following methodological steps:

1. **Identification of companies' tax reference numbers**

The tax reference number (CNPJ, its acronym in Portuguese) is crucial for retrieving any public information about companies in Brazil. For example, when submitting FOI requests, it is recommended that a company's CNPJ is mentioned so that the institution knows exactly which company is being referred to. In order to retrieve information about lawsuits from the Brazilian Judicial System (PJe), a CNPJ is also required.

Therefore, the first step adopted by the consultant was to research the CNPJs of all Brazilian suppliers of raw cane sugar provided by Foodrise. This research was done using Google and then by testing the CNPJs found in the database of Companhia Ambiental do Estado de São Paulo (CETESB), the State of São Paulo Environmental Agency.

All tax reference numbers from Raízen and Copersucar, and their respective mills, can be found in the folder Tax Reference Numbers.

2. **Submission of FOI requests to CETESB**

The consultant submitted FOI requests to CETESB to inquire about fines issued against the Brazilian suppliers of raw cane sugar provided by Foodrise. While CETESB did not provide the requested data, it signposted the consultant to databases that could be used to retrieve the relevant information.

3. **Retrieval of data about environmental warnings and fines**

Following steps provided by CETESB, the consultant downloaded all warnings and fines issued by the institution between 2020 and 2025 (from https://cetesb.sp.gov.br/documentos-emitidos/autuacoes/), and then selected the ones that were relevant to this investigation. A table of warnigns and fines was created for the main Brazilian suppliers of raw cane sugar, Raízen and Copersucar, including their their mills.

The data retrieved from https://cetesb.sp.gov.br/documentos-emitidos/autuacoes/ only informed the type of action taken by CETESB in relation to irregularities found (warning or fine), the name of the company (empreendimento), its address (endereço), the amount charged (valor), the unit in which it was charged (unidade), Brazilian Real or UFESP[1], and the piece of legislation the company was in breach of (enquadramento). This database did not provide information about the actual environmental harm.

In order to identify the actual environmental harm that led to the company being warned or fined, the consultant submitted an FOI request to CETESB requesting information about the environmental

[1] UFESP stands for Unidade Fiscal do Estado de São Paulo, which in English is the Fiscal Unit of the State of São Paulo. UFESP is a monetary reference unit used by the State of São Paulo to: 1. Calculate taxes; 2. Set fines and penalties; 3. Define fees and other state-level charges.

irregularities found by CETESB in some of the fines. CETESB replied by signposting the consultant to a different database: https://cetesb.sp.gov.br/licenciamentoambiental/infracao/

The above database was very difficult to use, because it is not easily downloadable in the UK. In order to access it, the consultant had to correct some errors that occurred due to the use of different characters in Portuguese (i.e. ç and ~). Once the dataset was accessed, the consultant retrieved the relevant information about the fines issued against the companies and added it to the tables of fines for Raízen and Copersucar. Only active fines were retrieved, as some fines had been cancelled after being contested by the companies.

4. **Analysis of warnings and fines**

Once warnings and fines were retrieved, the consultant summarised them in a document entitled "Warnings and fines – Summary in English". ChatGPT was used to translate the descriptions of the violations that gave rise to the warnings or fines into English. The consultant then identified the amount of each fine in Brazilian reais and in UFESP (a monetary reference unit used by the State of São Paulo to: 1. calculate taxes; 2. set fines and penalties; and 3. define fees and other state-level charges) and calculated the aggregate totals.

All fines, the two summary tables, and the English-language warnings and fines summary document are available in the Enforcement folder. The fines are organised by year and by month.

5. **Identification of relevant lawsuits**

In order to identify irregularities committed by Raízen and Copersucar that led to a lawsuit being filed, the consultant searched the CNPJ of each company on two legal databases: the State of São Paulo Court system (https://esaj.tjsp.jus.br/cpopg/open.do) and the Federal Court system (https://www.trf3.jus.br/pje). Some companies had more than 200 entries, and the consultant selected only the ones that were relevant to this investigation, namely those about environmental crimes.

Based on the information found on the court systems, the consultant created two Word documents with all the relevant lawsuits (one for Raízen and one for Copersucar). The consultant then selected only the lawsuits that were filed between 2020 and 2025 and added them to a shortlist of lawsuits (23 in total). This shortlist was shared with a Brazilian lawyer, who was able to retrieve the full content of the lawsuits.

The Word documents with all relevant lawsuits for Raízen and Copersucar and the shortlist shared with the lawyer can be found in the folder Lawsuits.

6. **Analysis of lawsuits**

Once the lawyer provided the lawsuits, the consultant read the main parts of each of them (petição inicial, contestação, sentença) to identify the environmental harms committed by the companies and the outcome of each lawsuit. The consultant then created a document (Lawsuits summary) with a summary of each case (translation into English was supported by ChatGPT) and identified the ones that were relevant to the investigation.

The cases highlighted in yellow are relevant to this investigation because an environmental harm was identified and it took place within the timeframe relevant to this investigation (2020 to 2025). The cases in blue contain environmental harms, but did not take place within the timeframe. The cases in red do not contain information that is relevant to this investigation.

All the lawsuits provided by the lawyer and the lawsuit summaries can be found in the folder Lawsuits.

7. Briefing writing

Based on the information retrieved from fines and lawsuits, the consultant wrote a briefing containing the main findings of this investigation.

Main findings

This briefing summarises the main findings of two key sources of information - judicial proceedings and enforcement records by the state of São Paulo Environmental Agency (CETESB) - used to identify environmental risks linked to sugar production activities associated with Copersucar and Raízen between 2020 and 2025 (with one relevant Raízen case filed in 2019). In total, 23 lawsuits were screened (14 in the São Paulo State courts and 9 in the Federal courts). Ten state-level lawsuits were considered relevant to this investigation (eight involving Copersucar-linked mills and two involving Raízen units), with the most common allegations relating to uncontrolled use of fire, pesticide drift, and failures to restore native vegetation, often followed by the signing of non-prosecution or restoration agreements and subsequent non-compliance with agreed obligations.

The CETESB enforcement data shows a consistent pattern of operational and compliance weaknesses across both groups of mills, centred on effluent and vinasse management, air emissions from bagasse-fired boilers, and licensing/reporting failures. **Copersucar mills** received **37 warnings and 21 fines** (totalling **19,751 UFESP** and **R$ 193,100.50**, excluding a unquantified daily fine), while **Raízen mills** received **35 warnings and 41 fines** (totalling **99,904 UFESP** and **R$ 291,000**). The most severe cases involve acute environmental harm, such as major water pollution incidents with high organic loads and fish mortality, large-scale vinasse leaks and spills, and unlawful burning or vegetation damage, alongside repeat non-compliance at a subset of mills, which concentrates the overall environmental and legal risk profile.

Lawsuits

In total, 23 lawsuits against Copersucar and Raízen were analysed in order to identify environmental damages linked to these companies - 14 from the State of São Paulo Court System and 9 from the Federal Court System. As we will see below, 8 lawsuits against Copersucar and 2 lawsuits against Raízen were relevant to this investigation, as the irregularities committed were related to sugar production and fell within the timeframe of 2020 to 2025 (with one exception, Raízen - Unidade Rafard, whose lawsuit was filed in 2019). All the relevant lawsuits were from the State of São Paulo Court System.

Most of the Federal lawsuits were filed by Ibama, the federal environmental agency, but they refer to non-payment of environmental fines and the case files do not describe what the fines were about. Three lawsuits refer to environmental damages, but the events happened outside the established timeframe (2020 to 2025).

Copersucar

From the 15 lawsuits related to Copersucar and its mills that were shortlisted for analysis, 8 revealed that the company's sugar production was responsible for environmental damages between 2020 and 2025. Five of these lawsuits were filed against UMOE Bioenergy S/A. There were also lawsuits against UMOE that were not included in this briefing because they fell outside the timeframe established for the investigation or because they related to environmental harm caused by activities carried out by

the company that were not directly linked to sugar production (for example soil erosion due to mineral extraction, Case n. 1009770-43.2022.8.26.0482).

The other companies sued were Ipiranga Agroindustrial (Usina Iacanga), Cocal Comércio Indústria Canaã de Açúcar e Álcool Ltda and Usina Caeté S/A. The environmental irregularities identified in the lawsuits range from the uncontrolled use of pesticides to the uncontrolled use of fire. These irregularities were associated with pollution and forest and vegetation destruction. A recurrent feature in the lawsuits is that companies signed non-prosecution agreements or environmental restoration commitments to avoid prosecution and then did not comply with the terms agreed in those agreements.
At the federal level, three lawsuits contained information about environmental damages caused by Copersucar, but the events happened outside the agreed timeframe. Two lawsuits (5005065-18.2022.4.03.6104-1764269050182-69706 and 5033650-59.2022.4.03.0000-1764268750808-248782) relate to a fire at Copersucar facilities that took place on 18/10/2013, causing fish deaths and marine pollution. The other one (5017471-84.2021.4.03.0000-1764269721955-248782) involves a fine dispute between Pedra Agroindustrial and Ibama, due to contamination of rivers by a leak of about 8,500 m^3 of molasses (a sugarcane by-product) on 15/10/2003.

A summary of each case can be found below.

UMOE Bioenergy S/A

1. Case no. 1000514-97.2021.8.26.0357
Parties: Nilson Mendes da Rocha x UMOE Bioenergy
Filed: 2021
Issue: Alleged pesticide drift causing death of cattle (toxic exposure)
Facts:
* Plaintiffs allege that aerial and terrestrial pesticide spraying on neighbouring sugarcane fields (04/02/2020, 16/04/2020, 30/04/2020) drifted onto their property.
* Four bovines allegedly died as a result of exposure to toxic substances.
* Company's position: Denies causal link; argues lack of toxicological, biological, photographic, or documentary evidence; asserts regulatory compliance.
Outcome:
* No final judgment issued.

2. Case no. 1000775-22.2022.8.26.0456
Parties: MPSP x UMOE Bioenergy
Filed: 2022
Issue: Environmental damage from vegetation fire (pollution and CO_2 emissions)
Facts:
* Fire occurred in May–June 2019 on Fazenda Vista Bonita and Fazenda Estância Bom Retiro.
* Technical reports indicated need to restore between 7.5 and 15 hectares of native vegetation, based on estimated emissions of 2,999 tonnes of CO_2.

* Prosecutor focused on pollution, climate impact, and need for improved fire prevention.

Outcome:

* Decision in favour of the Public Prosecutor's Office (04/04/2025).
* UMOE ordered to restore the area and adopt fire prevention measures.

3. Case no. 1001359-89.2022.8.26.0456

Parties: MPSP x UMOE Bioenergy

Filed: 11/07/2022

Issue: Fire damage to native vegetation and APP (Permanent Preservation Area)

Facts:

* Fire started on 30/07/2016 at Fazenda Santo Antônio.
* Total affected area: 592 hectares, including 236 ha of APP.
* Estimated atmospheric emissions: 2,530 tonnes of carbon.
* Prosecutor sought large-scale ecological restoration and atmospheric compensation.

Outcome:

* Judgment fully in favour of the MPSP (02/10/2025).
* UMOE ordered to restore native vegetation and compensate atmospheric damage, with fines for non-compliance.

4. Case no. 1500824-06.2022.8.26.0456

Parties: MPSP x UMOE Bioenergy

Filed: 2022

Issue: Irregular aerial spraying of agricultural product (Moddus)

Facts:

* Alleged breach of technical requirements (humidity, wind speed, distance from homes) during spraying on 15/08/2022.
* Prosecutor alleged diffuse risk to human health and the environment.

Outcome:

* Non-prosecution agreement (TAC) approved.
* On 03/09/2025, the judge declared the TAC reasonable and halted criminal prosecution.

5. Case no. 1501007-69.2025.8.26.0456

Parties: MPSP x UMOE Bioenergy

Filed: 2025

Issue: Fire damage to native vegetation, APP, and atmospheric pollution

Facts:

* Fire occurred on 08/06/2019 at Fazenda Santa Maria and Fazenda Laranjeiras.
* Burned area: 26.5 ha of native vegetation (20.84 ha APP).
* Estimated emissions: 612.12 tCO_2eq.
* Settlement attempts failed.

Outcome/status:

* No decision yet.

Ipiranga Agroindustrial (Usina Iacanga)

6. Case no. 1000548-24.2023.8.26.0027
Parties: MPSP x Ipiranga Usina Iacanga
Filed: 2023
Issue: Failure to restore native vegetation (APP and non-APP)
Facts:
* Environmental fines issued in 2018 for unauthorised vegetation damage.
* Company signed an environmental restoration commitment (TCRA) in 2019 but failed to comply.
Outcome:
* Settlement reached on 17/07/2024.
* Company must submit compliance reports every six months starting December 2024.

Cocal Comércio Indústria Canaã de Açúcar e Álcool Ltda.

7. Case no. 1000744-91.2022.8.26.0491
Parties: MPSP x Cocal
Filed: 2022
Issue: Environmental damage from uncontrolled burning
Facts:
* Fire destroyed grass vegetation and conservation unit (APP) with native vegetation.
Outcome:
* Decision in favour of the MPSP (05/06/2023).
* Company ordered to restore degraded areas.

Usina Caeté S/A

8. Case no. 1500419-56.2023.8.26.0416
Parties: State of São Paulo x Usina Caeté
Filed: 2023
Issue: Enforcement of 2010 environmental restoration commitment (TCRA) for unauthorised vegetation damage
Facts:
* Partial non-compliance identified in inspections, including in 2022.
Outcome:
* Proceedings suspended until February 2026 pending new restoration report.

Raízen Energia S/A

From the 8 lawsuits related to Raízen and its mills that were shortlisted for analysis, 2 revealed that the company's sugar production was responsible for environmental damages between 2019 and 2021. Given that fewer lawsuits were found in relation to Raízen than Copersucar, the consultant extended the timeframe to late 2019, as there was a relevant case from September 2019 against Raízen - Unidade Rafard. The environmental irregularities identified in the lawsuits include fire leading to unauthorised clearing of vegetation and air pollution.

A third case from 2020, filed by the Public Prosecutor's Office against Raízen - Unidade Univalem, was not included here because it is not directly related to sugar production, but to the construction of a dam. However, the case reveals that the company did not produce a proper Dam Safety Plan or an Emergency Action Plan, which confirms the company's lack of compliance with environmental laws.

A summary of each case can be found below.

1. Case no. 1051242-55.2019.8.26.0053
Parties: Raízen Rafard x State of São Paulo
Filed: 25/09/2019
Issue: Challenge to environmental fine for fire affecting native vegetation
Facts:
* Fire allegedly unauthorised; Raízen argued accidental/third-party origin.
Outcome:
* Final judgment (18/03/2022): fine upheld; decision in favour of the State.

2. Case no. 1001153-72.2021.8.26.0242
Parties: Municipality of Igarapava x Raízen (Unidade Junqueira)
Filed: 2021
Issue: Air pollution (dust) from heavy truck traffic
Facts:
* Dust from sugarcane transport on unpaved roads allegedly harmed air quality and public health.
* Injunction ordered road watering (minimum 6 times per day).
Outcome:
* Injunction granted (14/09/2021).
* Final decision (17/08/2023): obligation upheld; claim for collective moral damages rejected.

Enforcement findings

This section summarises the main environmental enforcement findings identified through a review of the State of São Paulo Environmental Agency (CETESB) administrative records concerning COPERSUCAR and Raízen mills. It highlights the scale, nature and recurrence of warnings and fines issued between 2020 and 2025, with a focus on the most common types of non-compliance, the mills with the highest concentration of enforcement actions, and the cases associated with the most significant environmental impacts.

In CETESB's enforcement framework, warnings and fines are distinct regulatory tools with different purposes and legal effects. Warnings are generally used when an irregularity is considered less severe, administrative in nature, or capable of being promptly corrected, and they function as a formal notice requiring the company to address a specific non-compliance within a defined timeframe. Fines, by contrast, are punitive measures applied when an infraction causes actual or significant environmental harm, poses a serious risk, reflects recurrent or persistent non-compliance, or when the applicable legislation does not allow for corrective action without penalty. Importantly, a fine does not necessarily depend on the prior issuance of a warning: CETESB may impose fines

directly in cases of serious pollution, environmental damage, or unlawful activity. Repeated warnings without effective correction often lead to fines, while fines signal a higher level of regulatory concern and enforcement severity.

In the State of São Paulo, environmental fines may be issued either in Brazilian Real or in UFESP, a monetary reference unit used by the State to set fines and penalties. Due to time constraints, fines expressed in UFESP were not converted into Brazilian Real. The table below presents the UFESP values applicable for the years 2020 to 2025:

PERÍODO	VALOR EM R$
de 01/01/2025 A 31/12/2025	37,02
de 01/01/2024 A 31/12/2024	35,36
de 01/01/2023 A 31/12/2023	34,26
de 01/01/2022 A 31/12/2022	31,97
de 01/01/2021 A 31/12/2021	29,09
de 01/01/2020 A 31/12/2020	27,61

Copersucar

An analysis of CETESB enforcement actions issued to COPERSUCAR and its mills shows a recurrent pattern of environmental non-compliance, predominantly linked to vinasse management, air emissions from boilers, operation without valid environmental licences, and failures to comply with regulatory and reporting obligations. While the majority of cases are warnings, a significant number of fines (some of high monetary value) indicate systemic operational and compliance weaknesses among certain suppliers.

Based on the enforcement records reviewed, CETESB issued a total of 37 warnings and 21 fines against COPERSUCAR mills between 2020 and 2025, corresponding to 19,751 UFESP in fixed penalties and R$ 193,100.50 in monetary fines. The totals above exclude a daily fine of 30 UFESP imposed on UMOE, as the duration of application was not specified in the available records and therefore could not be quantified.

Most common types of non-compliance

The most frequent issues identified by CETESB relate to improper handling and disposal of vinasse, including leaks from pipelines and tanks, surface runoff, accumulation in trenches, uncontrolled application to agricultural soils, and direct discharges into watercourses. These incidents often resulted in soil contamination, water pollution, fish mortality, and, in some cases, odour nuisance and vector proliferation (e.g. stable flies).

Another recurring category concerns air pollution, particularly excessive smoke opacity and particulate matter and NOx emissions from bagasse-fired boilers, sometimes exceeding both legal standards and the emission limits assumed in dispersion studies approved by CETESB.

A third common theme is regulatory non-compliance, including:

- Operation or expansion of pollution sources without valid Preliminary, Installation or Operating Licences;
- Failure to submit mandatory environmental monitoring or biennial management reports;
- Non-compliance with specific technical requirements set out in operating licences or formal CETESB determinations.

Mills with higher concentration of warnings and fines

The distribution of enforcement actions is uneven across mills. UMOE, Usina Caeté (Paulicéia), and Usina São José da Estiva stand out for having the highest number of warnings and fines, often involving repeated or overlapping non-compliances over multiple years. These companies exhibit patterns of recurrence, particularly in vinasse management, licensing irregularities, and delayed regulatory responses.

Other mills, such as Cocal, Pedra Agroindustrial, Viralcool, and Usina São Luiz, show a lower number of cases, but still include material incidents such as illegal discharges, exceedance of licensed production limits, air emission violations, and unauthorised vegetation removal.

Most relevant cases

The most severe incident concerns UMOE, which was fined for the illegal burning and destruction of approximately 17.3 hectares of native Atlantic Forest vegetation, classified as a specially protected biome in an early regeneration stage. This infraction represents a serious breach of Brazilian environmental legislation and resulted in a substantial monetary penalty.

Serious water pollution incidents were also recorded across several mills. UMOE, Usina São José da Estiva, Viralcool Açúcar e Álcool Ltda., and Usina Caeté S.A. (Paulicéia Unit) were involved in cases where untreated or inadequately treated industrial effluents, particularly vinasse, were discharged into watercourses, leading to critical reductions in dissolved oxygen, exceedances of biochemical oxygen demand limits, and, in some instances, documented fish mortality. These events indicate acute impacts on aquatic ecosystems and demonstrate failures in effluent management and infrastructure integrity.

In addition, recurrent and large-scale vinasse leaks and spills were observed at UMOE, Usina Caeté, and Usina São José da Estiva, often associated with ruptured pipelines, overflowing tanks, or inadequate application practices. The repeated nature of these incidents suggests structural deficiencies in maintenance, monitoring, and operational control, with cumulative impacts on soil, surface water, and nearby communities.

Finally, CETESB identified persistent operation of environmentally impactful infrastructure without valid licences at several facilities. Usina Caeté S.A. operated a 138 kV transmission line without a valid environmental operating licence, Viralcool Açúcar e Álcool Ltda. was fined for operating a

similar transmission line without authorisation, and Usina São José da Estiva and UMOE were repeatedly cited for operating industrial activity areas, ethanol storage tanks, or expanded processing capacity without the required Preliminary, Installation, or Operating Licences. These cases reflect not only procedural non-compliance but also elevated environmental and legal risk due to the scale and nature of the activities involved.

Raízen

An analysis of CETESB enforcement actions issued to Raízen and its mills indicate a pattern of recurrent non-compliance primarily associated with liquid effluent and vinasse management, atmospheric emissions from bagasse-fired boilers, and failures to obtain or comply with environmental licensing requirements. While many of the occurrences relate to operational deficiencies and administrative non-compliance, several cases involve significant environmental impacts, including degradation of rivers and streams that are legally required to be clean enough for human use and aquatic life, fish mortality, and repeated exceedances of air emission standards. Based on CETESB enforcement records, Raízen mills received 35 warnings and 41 fines, corresponding to 99,904 UFESP and R$ 291,000 in fixed monetary penalties.

Most common types of non-compliance

Across the Raízen mills analysed, the most frequent enforcement issues relate to management of effluents and vinasse, air emissions from bagasse-fired boilers, and failures to comply with environmental licensing requirements. CETESB repeatedly identified cases where untreated or poorly controlled liquid effluents—including vinasse, industrial wastewater, and chemicals—were discharged into rivers and streams that are legally required to meet minimum water quality standards. These discharges often resulted in elevated organic pollution (high DBO) and reduced dissolved oxygen (OD), and in some cases led to fish mortality.

Air issues were also common, particularly visible smoke/opacity exceedances from bagasse-fired boilers and particulate-related nuisance. A third recurring category involves operating or expanding pollution sources without the appropriate CETESB licences (e.g., waste mixing yards, lignin drying areas, equipment expansions), as well as documentation and reporting non-compliance (e.g., delayed or missing environmental restoration commitment – TCRA - reporting).

Mills with higher concentration of warnings and fines

The enforcement record is heavily concentrated in a small number of units. Raízen Energia S.A. – Filial Costa Pinto has by far the largest volume of actions (14 warnings and 16 fines) and the highest aggregate penalty values, indicating repeated and multi-category non-compliance (water, air, noise, and operational controls). Raízen Energia S.A. – Unidade Barra Bonita also shows a high concentration (4 warnings and 12 fines), driven by repeated boiler smoke opacity infractions and major water quality impacts.

Raízen Paraguaçu has a smaller number of enforcement actions (4 warnings and 3 fines), but the fines indicate repeated incidents of water pollution affecting the same river. By contrast, several units show isolated or low-frequency enforcement (e.g., Destivale, Diamante, Gasa, Serra, and Bonfim) but still include material issues such as unlicensed expansions, odour nuisance, and significant water

quality non-compliance (Bonfim). Overall, the pattern suggests that the environmental risk profile among Raízen mills is shaped less by the number of sites affected and more by repeat non-compliance and the severity of incidents at a subset of units.

Most relevant cases

The most serious cases involve a combination of significant environmental damage, high organic pollution loads, repeated incidents, and substantial financial penalties. Raízen Energia S.A. – Filial Costa Pinto stands out due to the number and severity of violations, including a particularly serious incident in which the irregular discharge of sugarcane molasses caused extreme depletion of dissolved oxygen (OD < 1 mg/L) and mass fish mortality (up to approximately 1,000 fish). This was accompanied by multiple fines for the discharge of treated and untreated effluents into the Rio Corumbataí, characterised by very high BOD (biochemical oxygen demand) levels and ineffective treatment, as well as additional non-compliances related to air emissions and noise.

Raízen Paraguaçu was fined on multiple occasions for discharging untreated industrial effluents into Córrego Água da Aldeia, resulting in repeated deterioration of water quality, particularly through increased organic pollution and reduced dissolved oxygen. Raízen Energia S.A. – Unidade Barra Bonita also recorded high-impact water pollution incidents, including severe degradation of Córrego Conceição, where dissolved oxygen dropped to zero and BOD levels were extremely high, as well as a separate fine linked to vinasse runoff that caused fish mortality. These water-related impacts were accompanied by numerous fines for excessive boiler smoke emissions.

Other notable high-risk incidents include chemical contamination at Raízen Araraquara, where a sodium hydroxide release raised water pH and untreated wastewater with very high BOD was discharged, and unauthorised open burning of sugarcane straw near populated areas and energy infrastructure at Raízen Centro-sul Paulista and Raízen Energia S.A. – Filial Diamante.