

## Community Safety: Technical and Corporate Integration for Risk and Impact Management

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### INTRODUCTION

Since 2019, Vale have been developing a process to systematically treat incidents within communities and promote their safety. Community Safety Incidents (CS) include impacts that harm the physical integrity of non-employees and that arise from production activities carried out by Vale or that occur in areas of Vale's responsibility. This exercise consisted of including a Community dimension into the already established process of managing environmental and occupational health and safety incidents. The process proposed outcome is to reduce safety events that result in physical injury to Community Members (CM).

The preventive approach is strengthened by the CS Integrated Plans (CSIP), which are territorial studies that must integrate all of Vale's operations present in a given location into a joint analysis. It aims to identify the safety risks for the local population resulting from Vale's productive activities, propose preventive actions and contribute to the development of the population's perception of risk. In 2022 and 2023, the reduction of CS incidents became an integral part of the variable compensation of the leadership as a Sustainability KPI.

### IMPACT MANAGEMENT

Between 2021 and 2023, there were 345 safety events involving Vale's production or production support activities that resulted in physical injury to non-employees/non-contractors. These events resulted in 73 fatalities and 332 non-fatal injuries with different levels of severity. These are events such as collisions between cars, trucks, buses and other Vale's vehicles and community's vehicles (motorcycles are especially recurrent), railroad accidents and, less recurrently, maritime ones and events resulting from invasion of Vale areas or interaction with structures for which Vale is responsible, such as pits, dams, railroad accesses, culverts and other related structures.

The Community Safety (CS) process, internally developed since 2019, aims to deal with this Vale's sort of impact in the territory where it operates by visibility and mitigation.

Environmental Impact Assessment usually consider the risks to the safety of potentially affected populations, generally associated with pressure on urban infrastructure and the safety of project structures (such as dams, for example), and on a regional/local scale. Less common, the specific socio-environmental programs monitors and mitigates this type of impact during the operation phase, on an individual scale, by identifying causes and defining corresponding action plans for each safety event. It was to fill this gap that the initial impetus for the CS process was given.

There were attempts to tackle the issue prior to 2019, but the establishment of "Life First" as a fundamental company's value, in response to the Mariana and Brumadinho tragedies, provided the decisive corporate backing for the development of the process. CS became one of the processes in Vale's Social Performance Model.

The first issue was to materially demonstrate that the problem existed, so the initial actions consisted of 1) establishing a routine for monitoring safety events with social loss, 2) consolidating indicators for follow-up and 3) making these indicators visible, especially to the company's top leadership.

At the same time, the concepts of "Community Member" (CM: anyone who is not a Vale employee or contractor) and "social loss" (physical injury to a CM) were standardized. These concepts were incorporated into the normative document for Health, Safety and Environmental Event Management. This initial stage had the strategic objective of consolidating the structure for recording events and thus guaranteeing systematic information and was developed over the course of 2019 and 2020.

This initial stage established criteria for registration that have become the basis for the entire process:

1. Our focus is life first: treat safety events involving employees (SS) and the community with the same effort, rigor, and commitment.
2. We are not discussing blame or responsibility: regardless of the possible responsibility of those involved in the event (for example, if there was unsafe behavior on the part of the CM), the aim of the process is to identify the causes of the event and reduce the chance of recurrence of events with the same profile.
3. CS as an impact management process: reinforcing the understanding that Vale's presence in the territory can increase the likelihood of safety events occurring.

### RISK MANAGEMENT

Once the foundations of the process had been established, it was expanded to cover all HSE event management procedures and to develop the CS risk management front. In the first expansion vector, the Communities dimension was fully incorporated into the safety event management process. This means that as of 2021, safety events involving members of the community will follow the same procedure applied to occupational safety, the environment and operational processes: reporting, recording, analyzing causes, proposing action plans and analyzing the effectiveness of actions.

This alignment with the existing HSE process represented a double challenge for the company - technical and cultural: proactively dealing with safety risks in uncontrolled (external) environments. Many of the causes observed in social loss events are associated with structural or behavioral conditions over which the company has no direct management margin (such as the state of repair of public roads or the unsafe behavior of non-employees). Initially, this profile of causes fueled pockets of resistance to the process in the teams involved.

However, gradually an understanding was established that Vale's presence in the territory, as a productive agent, can increase the chance of certain safety events occurring, even if the causes are not directly under its control. For example, a very recurrent event is the collision between employee transport buses and community motorcycles. The root cause of such events is largely associated with the behavioral factor of the motorcyclists, a factor that is difficult to deal with from a private agent's point of view. On the other hand, the installation of permanent bus routes and the consequent increase in the circulation of heavy vehicles in the urban core increases the likelihood of this type of collision.

In this line of work, it is still possible to extend the scale of analysis a further. The behavioral aspect, in these cases, can be associated with mobility problems resulting from disordered urban growth, an impact commonly related to the installation and operation of large projects.

This assumption broadens the approach to dealing with events with social loss because, in addition to considering the direct causes of the event (for example, unsafe behavior by a member of the community), it leads us to consider the risk factors associated with Vale's presence in the territory that may have contributed to increasing the chance of the event occurring (for example, the increase in bus traffic in a given location). With this, the action plan should tackle the direct causes of the event, but also propose ways of reducing the risk factors. It is at this point in the process that the risk management front begins to be developed, through the creation of CS Integrated Plans (CSIP).

As established in Vale's Risk Map, the CSIPs control the risk of Conflicts with Communities, and have the following objectives:

1. To expand the management capacity of the issue by integrating community-focused actions provided for in the Risk and Impact Management plans of operations/projects, and proposing complementary actions.
2. Contribute to building a perception of risk and safe behavior in communities
3. Preventing and mitigating the occurrence of events involving CM
4. Assist in monitoring events and response actions in the territories where Vale is present

The guidelines for drawing up the CSIP were established in December 2021, and their main orientation is related to their integrative nature. The scope of the plans is territorial and, therefore, all projects and operations present in a given territory must act in an integrated manner to identify risks and define action plans. It also requires the integrated action of different areas related to the topic: operational areas, community relations, institutional relations, property security, health and safety, legal, among others.

The integrative nature of the plan, which can bring together different operational units and thematic areas in the same working group, requires a solid definition of governance. Subsequently, a diagnosis of the territory is drawn up with a focus on identifying security risk factors based on 2 vectors of information: 1) morphological and human occupation characteristics and 2) Vale's production and production support activities. Risk scenarios are then proposed, and mitigation actions defined.

The CSIP guidelines provide for mitigating actions to be organized along the lines of Engagement (direct interaction with the population, their representatives and public administration bodies), Infrastructure (engineering works aimed at mitigating safety risks, such as viaducts, railroad level crossings, fences, etc.) and Procedures and Protocols (review of internal processes aimed at reducing exposure to risk). Between 2022 and February 2024, 22 CSIP were drawn up, covering almost all the territories where Vale is present in Brazil, projects in Peru, Chile and Malaysia.

### A REVIEW OF THE PROCESS

In 2022 and 2023, CS indicators were part of the company's variable remuneration targets, on a global scale. In 2022, the target was a 10% reduction in the number of events (baseline 2021), with a penalty for fatalities. The result was an 8.7% reduction in the number of events and a 32% reduction in the number of fatalities.

In 2023, the reduction target was maintained at 10% (baseline 2022), while the result was an increase of 18%. It is important to note that while there was an increase in the number of events in 2022, there was an 8% reduction in the most severe events (fatalities and lives changed). Considering fatalities, the reduction in 2023 was 20%.

The increase in the number of registered events may be related to the consolidation and visibility of the process itself, and to greater efficiency in the event registration process. The continued reductions in the number of fatalities point to the effectiveness of the actions implemented over the period. The most recurrent severe event profiles are collisions on public roads (2022: 52%; 2023: 63%) and railroad accidents (2022: 40%; 2023: 19%).

The experience of two consecutive years as a variable remuneration target has considerably increased the visibility and penetration of the CS process in Vale's projects and operations. The results achieved have also highlighted the value of the process for the company, insofar as they materialize the value of Life First.

It is important to note that the risk (CSIP) and impact (event response action plans) management actions are predominantly about reviewing internal procedures and protocols and interacting with the population and public authorities, so that the significant reductions in the number of severe events over the last two years are not directly associated with significant investments in infrastructure works, but with improving processes and relationships.

#### NEXT CHALLENGES

In 2024, the main challenges for the CS process are a new wave of technical development and the consolidation and corporate monitoring of CSIP. From a technical point of view, the main challenges are to refine the technical apparatus for classifying the severity of events specifically for events with social loss and to develop a predictive analysis methodology capable of anticipating impact scenarios based on risk factors related to Vale activities and the morphological and human configuration of the territories, thus enhancing the effectiveness of control measures.

The implementation and monitoring of the CSIPs is the main vector for consolidating the CS process from 2024 onwards, because these plans coordinate actions on this issue in each territory and with the integrated participation of the related areas and units. Monitoring includes evaluating the effectiveness of the actions, reviewing the plans according to the results obtained in the last cycle and drawing up new plans, with a view to covering all the territories where Vale is present.

#### KEY MESSAGES

Community safety, HSE, risk management, impact management, impact assessment, community relations, corporate culture.

#### REFERENCES