

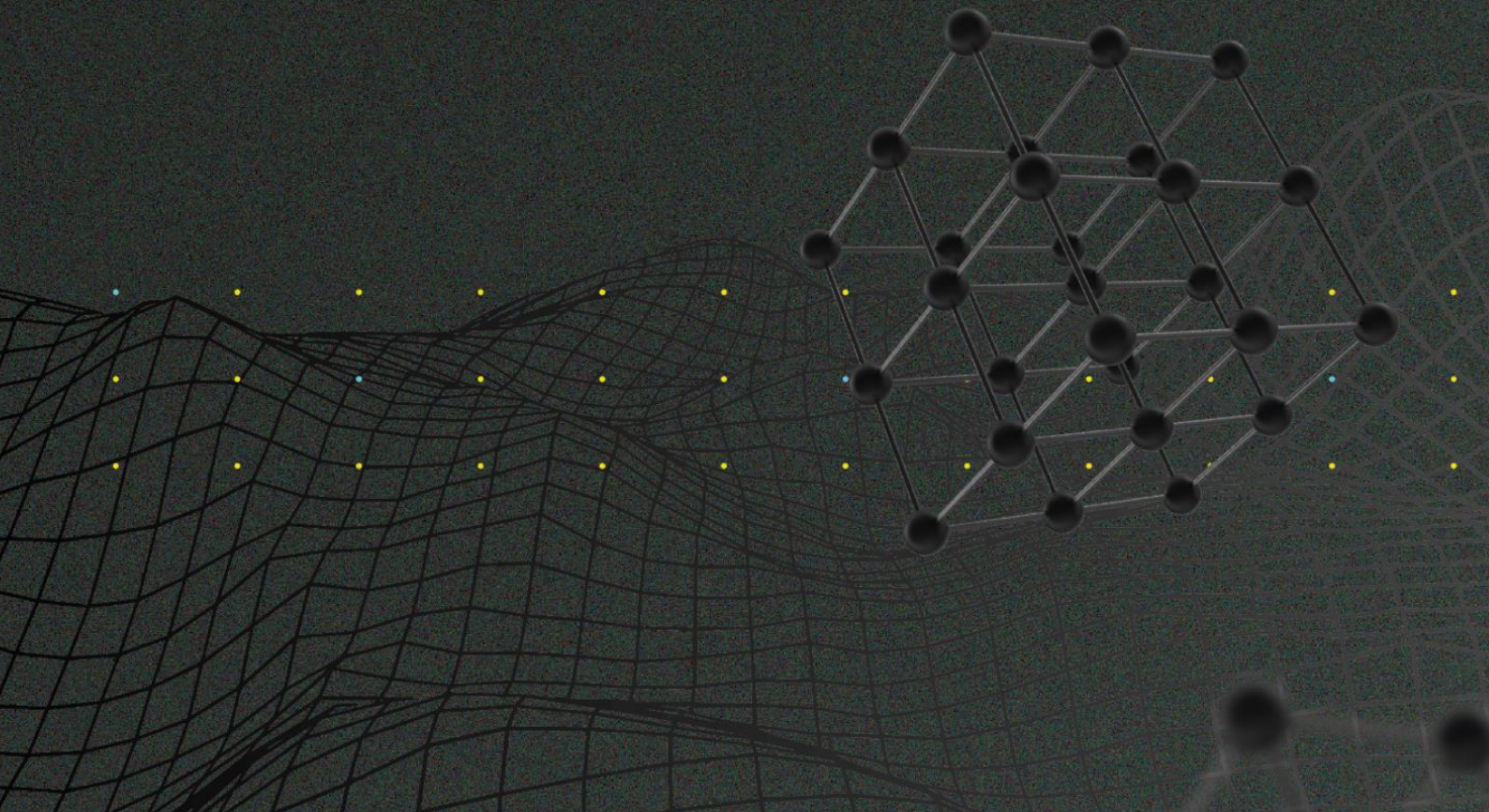
mininghub.

# ▶ NOTICE ◀

## M-START

CYCLE 8

POWERED BY  
neovertures





## CHAPTER I - THE PROGRAM

**Article 1** - The M-START program is an initiative of the **MINING HUB** and aims to build a direct channel between mining companies and applied innovation initiatives (startups, academic projects, and technology-based companies). The program seeks to connect these enterprises to the associated mining companies for, mainly, the development of solutions for challenges in the following themes: (1) Decarbonization, (2) Social Development, (3) Operational Efficiency, (4) Alternative Energy Sources, (5) Water Management, (6) Tailings and Waste Management, and (7) Safety and Occupational Health.

**Sole Paragraph** - The purpose of this Public Notice is to define the rules and conditions for participation in the **M-START CYCLE 8** program.

**Article 2** - In order to seek innovative solutions for the mining industry, the main objective of **M-START** is to prospect and select ("STARTUPS"), as defined in Article 3 of this chapter, and support the development of Proofs of Concept ("PoCs") of such startups with the Mining Companies associated with the Mining Hub.

(i) Proof of Concept: Proof of Concept (PoC) is understood to be the project that aims to demonstrate the feasibility of an idea for a potential project or product. It also corresponds to a small-scale project carried out to prove that the technology has the potential to solve a given problem, being carried out on a small scale and within a previously established schedule.

**Article 3** - Participation in the M-START program is targeted at:

(i) STARTUPS and technology-based companies that fit the definition of Startup according to Complementary Law 146/2019, which in its Article 4 defines:

*Startups are defined as business or corporate organizations, newly created or in recent operation, whose performance is characterized by innovation applied to the business model or the products or services offered.*

*§ 1<sup>st</sup> For the purposes of applying this Complementary Law, the individual entrepreneur, the individual limited liability company, the business companies, the cooperatives and the simple (civil) companies are eligible for framing in the special treatment mode intended for the promotion of startups:*





*I - With gross revenue of up to R\$ 16,000,000.00 (sixteen million reais)<sup>1</sup> in the previous calendar year or of R\$ 1,333,334.00 (one million, three hundred and thirty-three thousand, three hundred and thirty-four reais) multiplied by the number of months of activity in the previous calendar year, when less than 12 (twelve) months, regardless of the corporate form adopted;*

*II - With up to 10 (ten) years of registration in the National Register of Legal Entities (CNPJ) of the Special Secretariat of the Federal Revenue of Brazil of the Ministry of Economy.*

(ii) SPIN-OFFS, as companies derived from another organization, whose purpose is dedicated to innovation and that meet items I and II set out above.

(a) For purposes of this Public Notice, hereinafter, these companies will also be referred to as STARTUP.

(ii) MINING COMPANIES associated with the Mining Hub.

**Article 4** - The right to become a “SPONSOR MINING COMPANY” to the MINING COMPANIES associated with the Mining Hub is exclusive. A SPONSOR MINING COMPANY is the one that directly supports the development of one or more Proofs of Concept.

## CHAPTER II - PROGRAM STAGES

**Article 5** - The main stages of the **M-START CYCLE 8** are shown and detailed below:

- Applications: from 03/21/2022 to 04/25/2022 at 23:59 BRT:

The candidate STARTUP must submit its proposal using the online form available through the website [www.mininghub.com.br](http://www.mininghub.com.br).

- Selection: from 04/26/2022 to 06/24/2022:

The evaluation and selection of the proposals will be made by a panel composed of the program management team and technicians from the MINING COMPANIES, according to the rules established in this Public Notice. More

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<sup>1</sup> For currency conversion purposes, the value of 1 USD = 5.1388 Real/BRL, as established on 02/25/2022 by the Central Bank of Brazil, shall be used as reference.





information about the Selection stage can be found in Chapter V of this Public Notice.

- Proof of Concept (PoC): from 06/21/2022 to 12/15/2022:

Period in which the STARTUP will sign the contract with the SPONSOR MINING COMPANY and will also execute the PoC, according to the work proposal presented and validated in the Immersion stage, held during the Selection stage.

- Contract signing from 06/21/2022 to 07/22/2022
- Implementation of the PoC from 07/23/2022 to 11/16/2022
- Demoday on 12/15/2022

At the end of the Proof of Concept stage, the STARTUP that has its PoC validated will participate in the Demoday, closing event of the program cycle, in which the STARTUPS present the results of the PoCs.

**First Paragraph** - The execution activities of the PoCs will only start after the conclusion of the contract signature process by all parties involved - STARTUP, MINING COMPANY and IBRAM.

**Second Paragraph** - The validation of the PoC for a given challenge, throughout the program, will occur between one STARTUP and one SPONSOR MINING COMPANY, and at the end of the execution cycle the case generated will be shared with all other MINING COMPANIES associated with the Mining Hub.

**Third Paragraph** - The schedule of activities for the main stages of the **M-START** program is available for consultation on the website [www.mininghub.com.br/en/programas/m-start](http://www.mininghub.com.br/en/programas/m-start), as well as in ANNEX I of this Public Notice.

### CHAPTER III - CHALLENGES AND SPONSOR MINING COMPANIES

**Article 6** - From article 7 to 13 of this Public Notice, we describe the challenges proposed by the Mining Companies, divided by themes. In addition, for each challenge, there is a picture that aims to promote a better understanding of the key information of each problem. The pictures can be seen in Annex II.



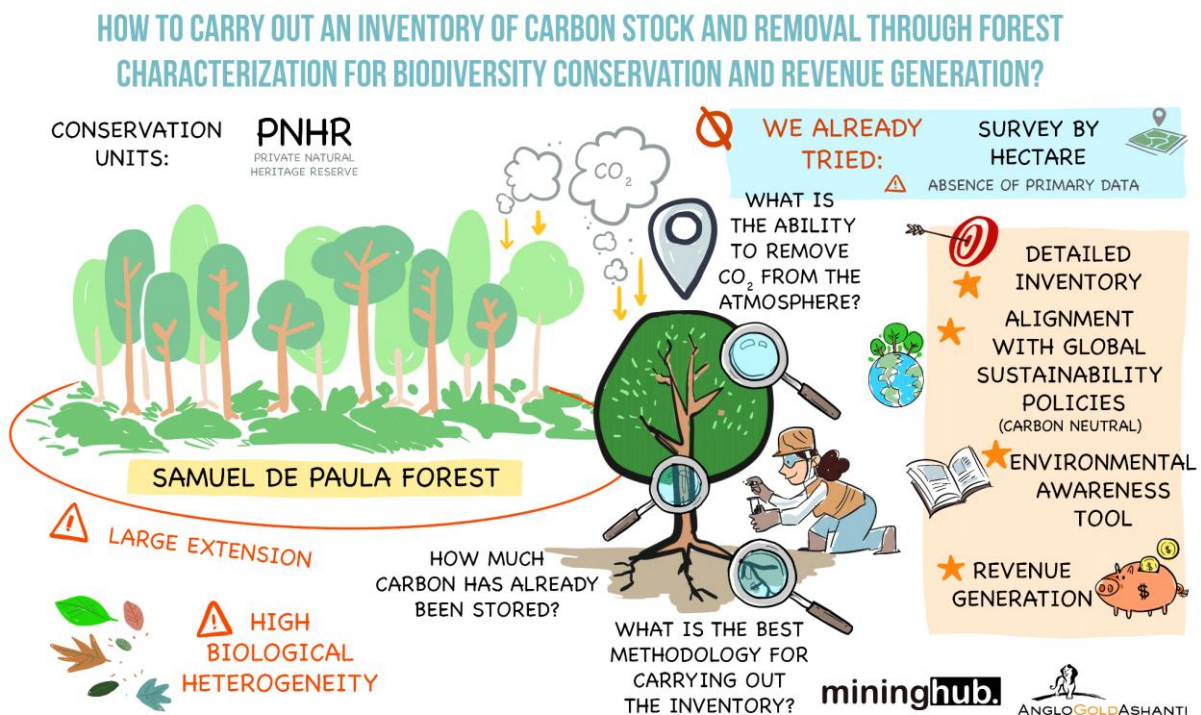


Article 7 - Regarding the theme "DECARBONIZATION" the challenges launched, and the respective SPONSOR MINING COMPANIES are shown in Table 1.

Table 1 – Decarbonization

CHALLENGE	MINING COMPANY
1.1 - How to carry out an inventory of carbon stock and removal through forest characterization for biodiversity conservation and revenue generation?	AngloGold Ashanti

### 1.1 How to carry out an inventory of carbon stock and removal through forest characterization for biodiversity conservation and revenue generation?



Sponsor Mining Company: AngloGold Ashanti

#### Challenge Description:

In recent years, climate change has attracted the attention of all society about its real impact, whether on the environment, on public and social entities or on companies. The problems caused by climate change have accelerated the process of defining initiatives to mitigate these changes. A practical example is the commitment signed by AngloGold Ashanti (as well as other companies in the sector) to become carbon neutral by 2050. In parallel to this, the mining companies have for some time had green





areas, known as conservation units, open to the public or that are environmental spaces for the preservation of biodiversity and the promotion of ecosystem services. These natural areas have great potential to contribute to the mitigation of the causes of climate change. That is why this challenge is crucial to better understand the potential for generating carbon stock, also generating revenue for companies. Additionally, the initiative can reduce another problem, which is society's lack of knowledge on the subject. In parallel, this work can generate technical information on the cataloged species for environmental education practices through technological tools, such as QR CODES and other means.

In short, we are looking for a methodology to carry out this inventory *in loco* and that has the capacity to meet the wishes of the proposal, presenting the real situation of the RPPN (Private Natural Heritage Reserve) Mata Samuel de Paula, from AngloGold Ashanti, facing the stock and removal of carbon, also sharing this information in an educational as well as a technical way.

**Expected results:**

- Delivery of a detailed inventory of the RPPN Mata Samuel de Paula;
- Development of educational content / awareness tool for sharing the theme, both externally and within the reserve itself, through technological elements;
- Present alternatives for generating revenue through the proposal.

**What we do not want or have already tested:**

So far, we have carried out a study by surveying per hectare, considering only secondary data. In this PoC we intend to have a survey through field activities, generating primary data.

**Possible difficulties for the implementation of the PoC:**

- Territorial extension to be studied;
- Species specificities within the RPPN.

**Article 8** - Regarding the theme "SOCIAL DEVELOPMENT", the challenges launched and the respective SPONSOR MINING COMPANIES are shown in Table 2.



. Table 2 – Social Development.

CHALLENGE	MINING COMPANY
2.1 - How to transform an obsolete Government Resource Planning and Management (GRP) platform into a more modern and functional system?	Vale

**2.1 - How to transform an obsolete Government Resource Planning and Management (GRP) platform into a more modern and functional system?**



**Sponsor Mining Company:** Vale

**Challenge Description:**

Within the Comprehensive Reparation Agreement (quick response package) we have the Food Acquisition Program - PAA, used by various agencies and with different modalities, at the state level in Minas Gerais, which is managed by the SEAPA - MG agriculture system through of the Information System of the Food Acquisition Program - SISPA (operational and management tool of the PAA hosted and maintained by the Ministry of Citizenship - MDS). Initially, SISPA was operationalized in the Purchase with Simultaneous Donation modality, through a Term of Adhesion. Over the last few



years, there has been an accelerated growth in the number of municipalities served and users throughout Brazil, exceeding the initially planned capacity, which currently generates several inconveniences and delays in operation and management. Furthermore, this system is of exclusive use for the management of resources of federal origin.

The objective of the "Food Acquisition Program with Simultaneous Donation" project is to promote access to food and encourage family farming by purchasing food from producers and making it available for simultaneous donation, preferably to social assistance entities in the affected municipalities. In this, the operational and management tool of the PAA, the SISPA, requires the development, maintenance and adaptation of a system based on a platform for Planning and Management of Governmental Resources (GRP), with long-term support focused on agricultural actions based on technical services (HST) and with supply, management and maintenance of high performance storage of ITSM management tool and management model based on the ITIL® library in order to support the actions related to the execution of the "Food Acquisition Program" project. The development should be based on proprietary PaaS technology, including all the development, implementation and deployment of software, hardware and network infrastructure necessary for continuous use and for a defined period, in addition to training on the system developed and implemented. It is necessary to develop a system similar to SISPA, with corrections of deficiencies and improvements of functionalities, adapting to the specificities of the municipalities served (25 municipalities in the Paraopeba River Basin), as well as the evolution of new technologies such as, for example, Cloud and Mobile

The challenge, in general, is based on the provision of a turnkey Web Development solution, in order to meet the diverse demands open to the support and development of the system. For this, it is necessary to carry out a technical specification (ET) in which the basic and primordial requirements to develop and implement the GRP system will be raised.

**Expected results:**

Development of a technical specification to map all the requirements necessary to support the development of the system.







**What we do not want or have already tested:**

In practice, there is already a GRP system in use for managing the PAA, but no more up-to-date version has yet been developed, nor a technical specification that addresses this more in-depth mapping of the requirements needed to develop a more modern system that is compatible with current demand.

**Possible difficulties for the implementation of the PoC:**

A possible challenge is to map, in the technical specification (ET) in a reliable way, all the points that need to be improved, updated and modified for further development of the GRP. In addition to presenting at the ET, in a compatible way, the client's demand (SEAPA - State Department of Agriculture, Livestock and Supply) for the execution of the public policy for the Food Acquisition Program.

However, in this new system, Vale will enter as an entity at the beginning of the process (paying source). After the end of the process, it should leave the scope and leave SEAPA as responsible for the actions between municipalities and producers.

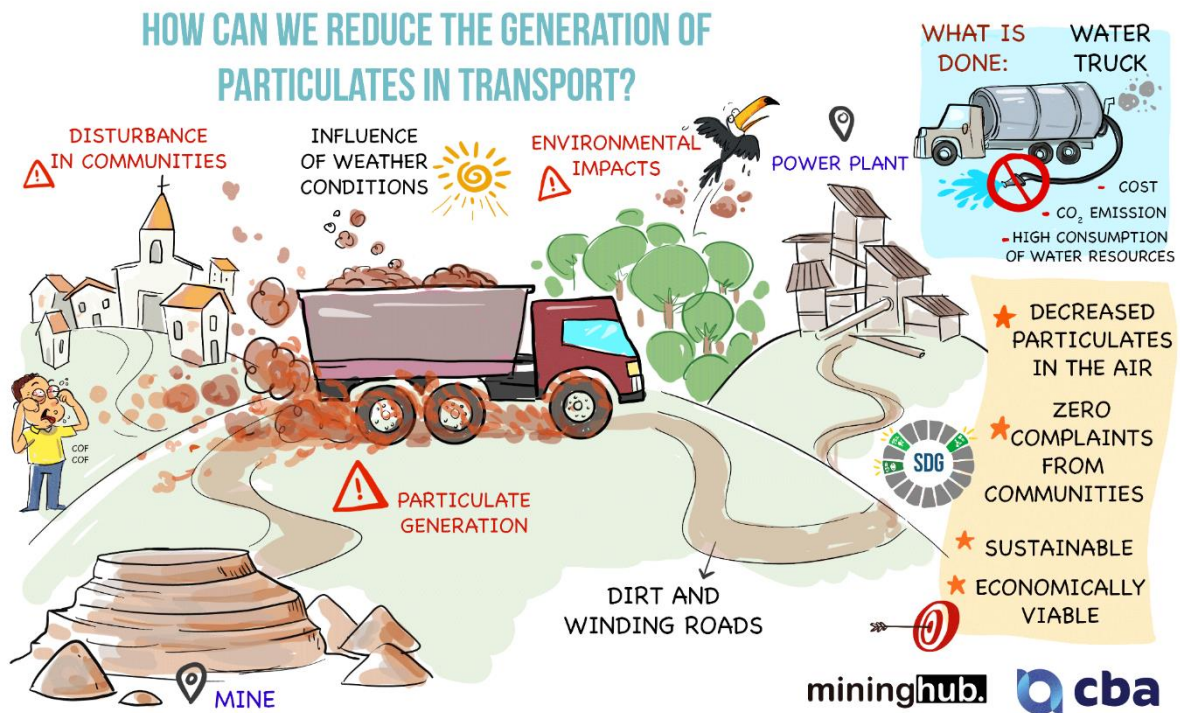
**Article 9** - Regarding the theme “OPERATIONAL EFFICIENCY”, the challenges launched and the respective SPONSOR MINING COMPANIES are shown in Table 3.

*Table 3 – Operational Efficiency.*

CHALLENGE	MINING COMPANY
3.1 - How can we reduce the generation of particulates in transport?	CBA
3.2 - How to perform mine drainage using 4.0 technologies?	CBA
3.3 - How can we solve the problem of excess moisture in iron ore during storage and transport?	CSN
3.4 - How to evaluate and monitor the dynamics, over time, of changes in vegetation cover and land uses in mining areas in Brazil?	Vale



### 3.1- How can we reduce the generation of particulates in transport?



**Sponsor Mining Company: CBA**

**Challenge Description:**

The roads where most of the vehicle traffic with ore from the mines takes place are unpaved roads, and this causes the generation of particulates (dust) during the journey, passing through communities and forest areas, which can cause damage to the environment and to the population health.

**Expected results:**

Sustainable solution and with the reduction of the quantity of particulates in the air. The particulate measurement control carried out monthly in the areas with the highest dust emission will be a parameter used to measure the effectiveness of the PoC.

**What we do not want or have already tested:**

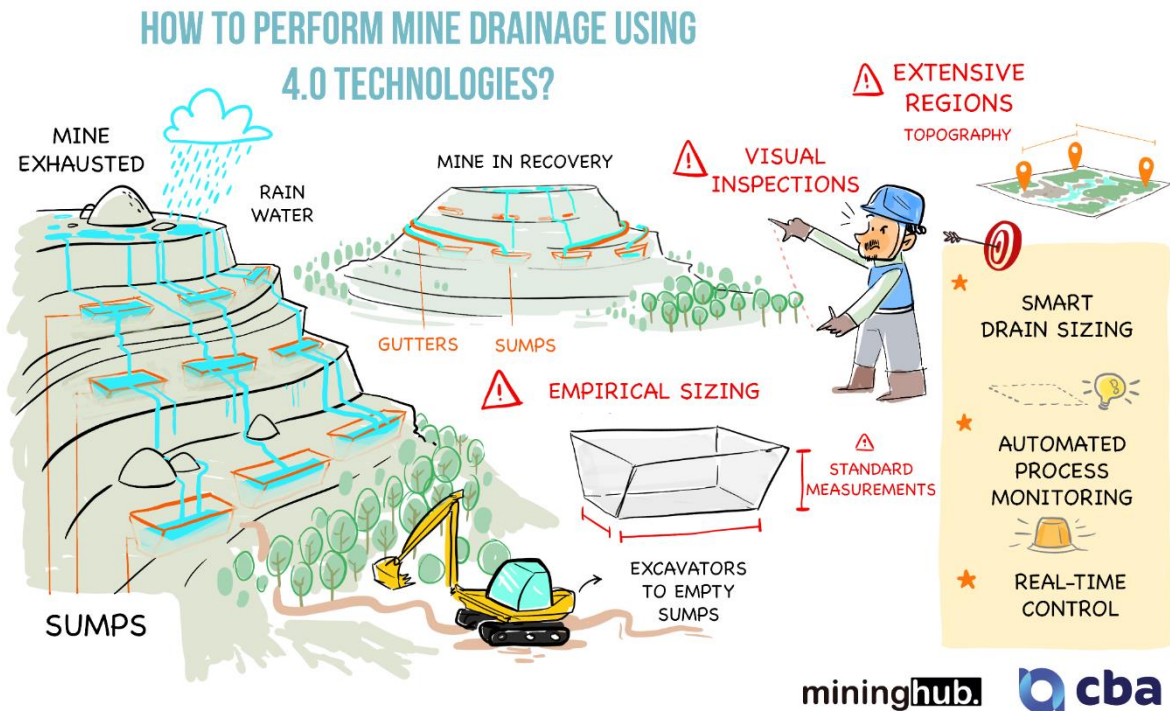
Wetting the roads with a water truck and a solution with a high cost of water and economic resources.

**Possible difficulties for the implementation of the PoC:**

Solutions with less water use are needed and it is important that they have economic viability on a large scale.



### 3.2- How to perform mine drainage using 4.0 technologies?



**Sponsor Mining Company: CBA**

#### Challenge Description:

Mining at CBA is carried out on several mining fronts simultaneously, requiring a drainage project whenever a new area is to be mined. Currently, the drainage activity is carried out in a mechanized way through excavators, but with an empirical dimensioning for the opening of Sumps (wells for storing rainwater). Inspections in the area are carried out visually by an operator, who needs to travel to the site to carry out the activity.

#### Expected results

Perform mine drainage in a more automated way, with intelligent drainage sizing and real-time monitoring.

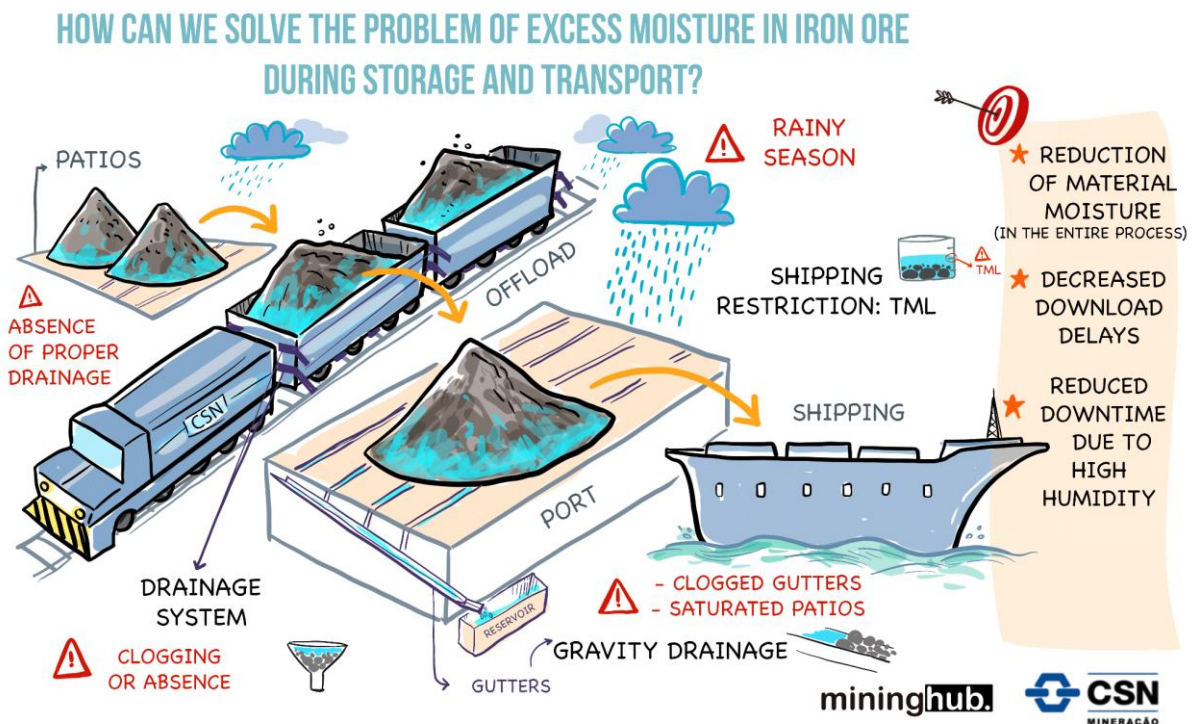
#### What we do not want or have already tested:

No previous solution has been tested. Currently, more empirical methods are being used during the activity.

**Possible difficulties for the implementation of the PoC:**

Lack of connectivity in mine areas, difficulty in accessing sites and the cost involved in changing the process.

**3.3- How can we solve the problem of excess moisture in iron ore during storage and transport?**



**Sponsor Mining Company: CSN**

**Challenge Description:**

Excess moisture in iron ore is harmful to several parts of the process, for example: loading and transport (rail), unloading (car dumpers), storage and loading and transport (maritime). The challenge is to reduce this excess moisture in the material, that is, that water that is not intrinsic to the material, mainly in the stockyards and during rail transport, through drainage.

**Expected results**

The reduction of the humidity of the materials and the improvement in its handling. The reduction in humidity will collaborate to increase the productivity of the entire logistics chain, since transport billing is carried out on a wet basis, that is, we pay for the "excess water" that we are transporting.



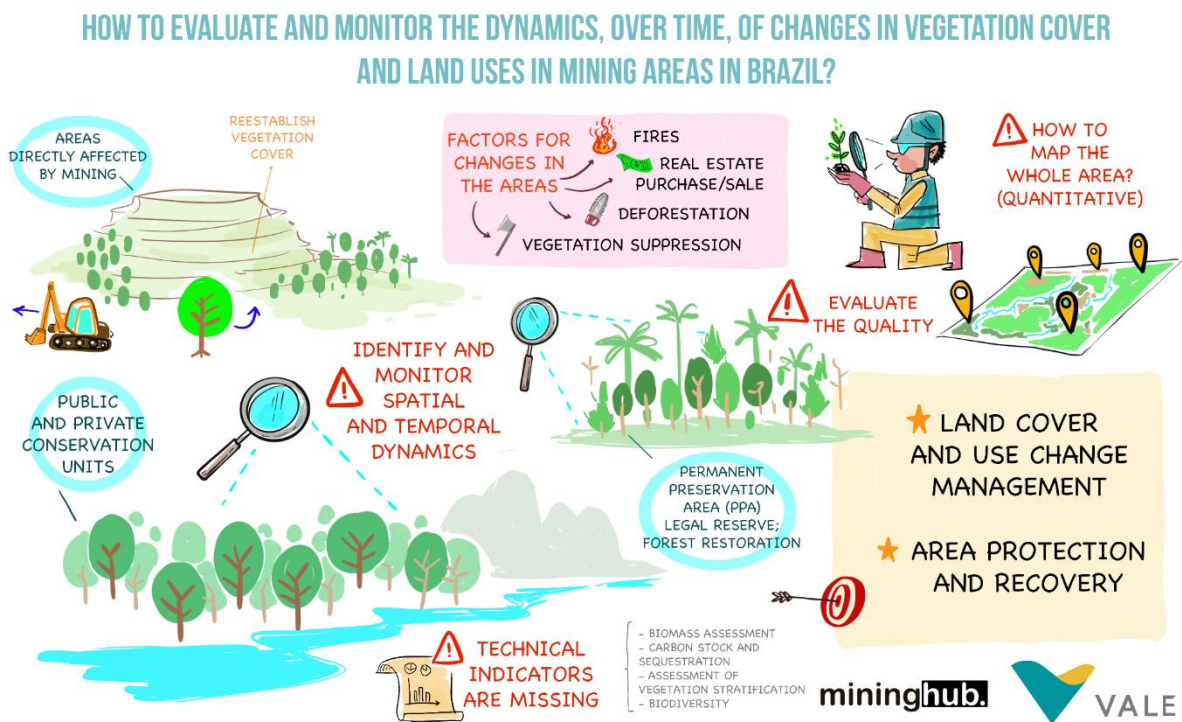
**What we do not want or have already tested:**

Solutions for this system have not yet been tested.

**Possible difficulties for the implementation of the PoC:**

A restriction that may arise is that within CSN's logistics chain, there are external terminal yards, which we use to store and load purchasing materials. In this context, transport assets and rail compositions are owned by a rail transport company. It is important that the solution is economically viable and easy to implement, since it may be necessary to apply it to assets that are not CSN's.

**3.4- How to evaluate and monitor the dynamics, over time, of changes in vegetation cover and land uses in mining areas in Brazil?**



**Sponsor Mining Company:** Vale

**Challenge Description:**

Development of indicators (quantitative and qualitative) to assess and monitor the spatial and multitemporal dynamics of changes in vegetation cover and land uses in impacted areas and other controlled areas in the process of recovery and/or restoration, as well as areas protected by the mining companies in Brazil, including quantification of biomass (as a possible qualitative factor) and estimation of stock and





balance of carbon emissions and removals from the quantification of existing biomass in the areas.

In addition to the indicators, what is also sought is the remote monitoring of the impacted, recovered, restored and protected areas of the mining companies' areas of interest, based on geotechnologies (high resolution orbital images, such as, for example, Ikonos, GeoEye and WorldView; air transporters such as drones with hyperspectral cameras and LiDAR etc.), thus avoiding all the deleterious aspects associated with current procedures.

It would be a way to facilitate, standardize and automate surveys of impacted areas, protected areas, including areas directly impacted by mining in the recovery process, as well as areas in the process of restoration as compensatory measures.

### **Expected results**

Development of a methodology for spatial and multitemporal evaluation and monitoring of areas of interest to the mining companies in Brazil, through the establishment of quantitative and qualitative indicators that can reliably detect changes in vegetation cover and land use, including the quantification of biomass and the consequent estimation of stored carbon.

Development and delivery of a digital platform to continuously manage the generated spatial information that allows monitoring the evolution of quantitative and qualitative indicators, which should reflect changes in vegetation cover and land use in areas of interest to the mining companies in Brazil.

Application development and delivery so that the potential users can access, in a quick and customized way, the information from the above platform.

### **What we do not want or have already tested:**

There are land cover and land use mappings carried out using methodologies based on the use of supervised identification algorithms, indexes or photointerpretation by an analyst/technician. However, such mappings lack a qualitative assessment (indicators) of the areas of interest, mainly with regard to their state of conservation and the performance of the recovery/restoration process that they may undergo, and that take into account their stocks of biomass and the consequent estimation of carbon.





**Possible difficulties for the implementation of the PoC:**

- Standardization of land cover classes and land use and indicators, both quantitative and qualitative, that are common (comparable) for all areas or territories under the influence of the mining companies in Brazil, taking into account their different territorial characteristics, ore typologies and structures;
- Carrying out spatial and multitemporal assessment and monitoring of the landscape on a scale and in a determined time interval, both quantitative and qualitative, that is accessible to potential users at a reasonable cost;
- Creation and maintenance of a platform for the continuous management of spatial information and evaluation by monitoring the evolution of quantitative and qualitative indicators developed;
- Development of customized applications.

**Article 10** - In relation to the “ALTERNATIVE ENERGY SOURCES” theme, the challenges launched and the respective SPONSOR MINING COMPANIES are shown in Table 4.

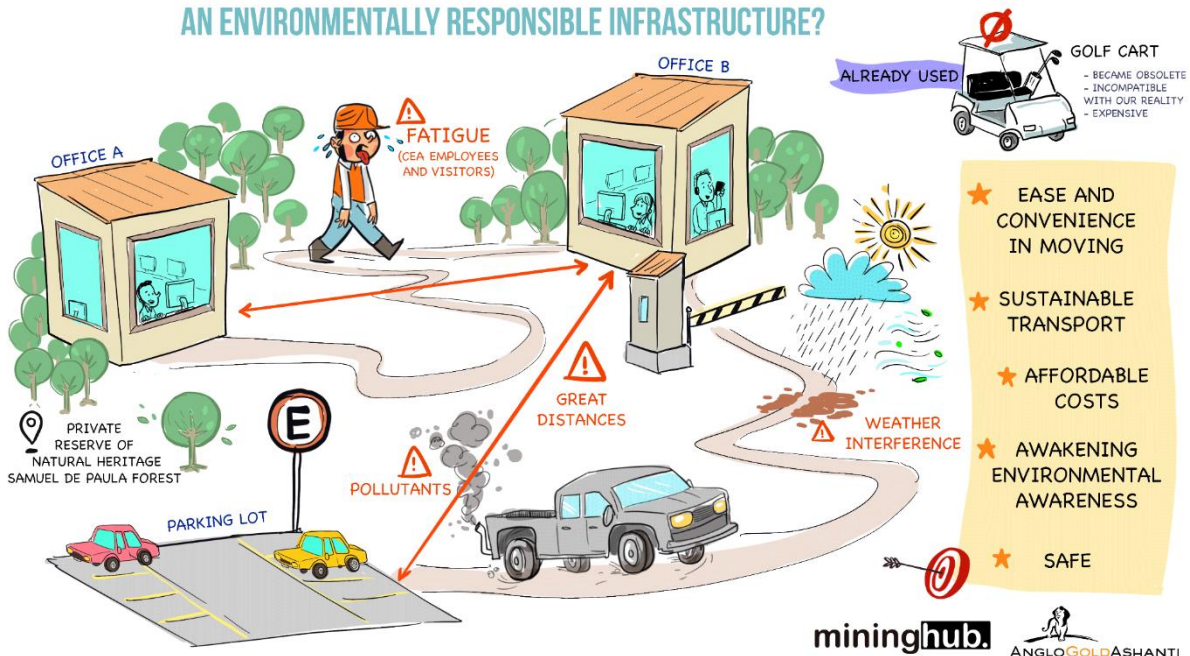
*Table 4 – Alternative Energy Sources.*

CHALLENGE	MINING COMPANY
4.1 - How to promote mobility and accessibility in administrative areas through an environmentally responsible infrastructure?	AngloGold Ashanti
4.2 - How to generate energy by the water differences in the pipes?	CBA



## 4.1 - How to promote mobility and accessibility in administrative areas through an environmentally responsible infrastructure?

### HOW TO PROMOTE MOBILITY AND ACCESSIBILITY IN ADMINISTRATIVE AREAS THROUGH AN ENVIRONMENTALLY RESPONSIBLE INFRASTRUCTURE?



**Sponsor Mining Company:** AngloGold Ashanti

#### Challenge Description:

The sites of the mining companies usually have a large extension, considering the operational areas and also the administrative sectors, the focus of this challenge. Even with the technology that currently exists, which facilitates bringing people together (e-mail, messaging applications, telephone, etc.) there is a need to move between different sectors in the same location. The most used means for this are motor vehicles, which in most cases use fossil fuels. The challenge in question is to ensure mobility for employees/ visitors to a particular location and, in the case of this challenge, within the Private Reserve of Natural Heritage - RPPN Mata Samuel de Paula (which houses the AngloGold Ashanti Environmental Education Center - CEA), in a more sustainable way and with a transport infrastructure that is based on alternative energies, guaranteeing, at the same time, safety for those involved. In addition, the challenge can contribute to increasing the environmental awareness of the public involved.





Get to know the CEA through the link:

<https://www.youtube.com/watch?v=kiTRA0rDSMs>.

**Expected results:**

- Mobility equipment implemented at the CEA;
- Equipment that promotes the reduction of employees/ visitors' fatigue;
- System that presents health, environment and "decarbonization" indicators (so that the user is aware of how much he or she is contributing positively to the environment and to his or her own health with the use of the equipment in question).

**What we do not want or have already tested:**

In the past, the use of a golf cart has already been tested at the CEA. However, this vehicle became obsolete, due to its size and handling complexity, in addition to the high exposure to humidity present in the area.

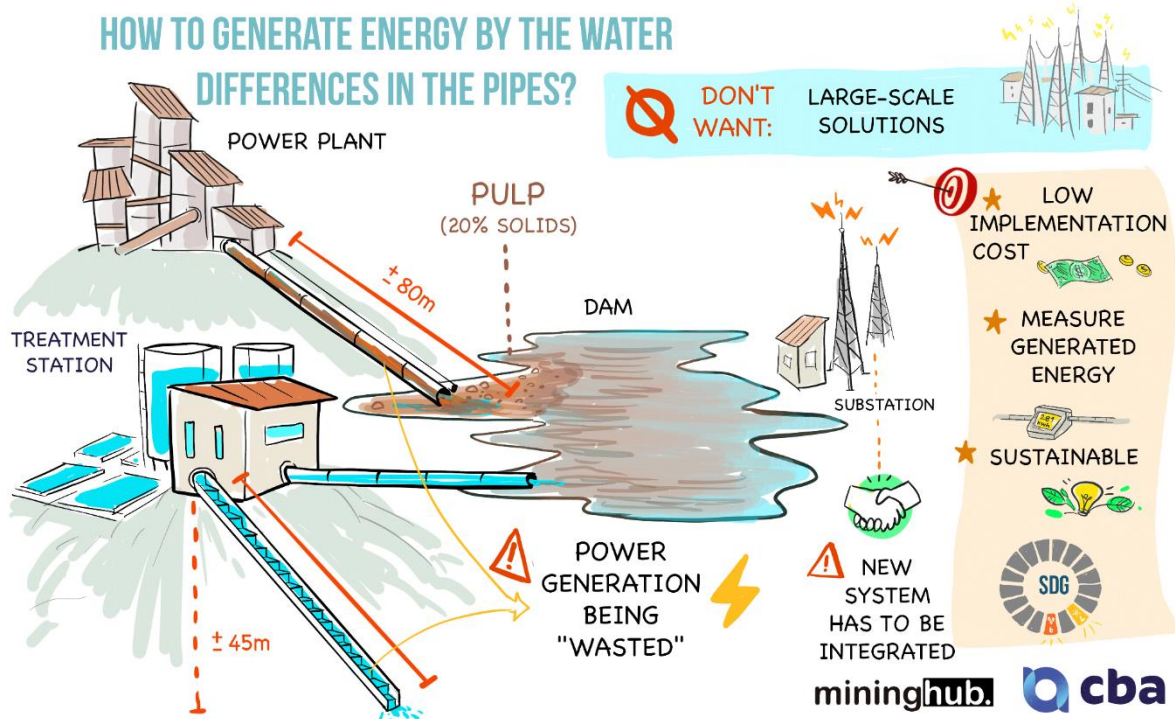
It is important to emphasize that some type of electric vehicle can be considered as a solution to the challenge, as long as it is appropriate to the reality.

**Possible difficulties for the implementation of the PoC:**

Climate issues; Irregularities in the pavement of the access areas.



## 4.2 - How to generate energy by the water differences in the pipes?



**Sponsor Mining Company: CBA**

### Challenge Description:

We have a tailings dam and a water treatment plant, with different levels of terrain and with large waterfalls and also water with 20% solids. The height of these waterfalls is known and we believe that we have the potential to generate energy in this process.

### Expected results:

Sustainable solution that allows integration with the current energy system.

### What we do not want or have already tested:

The possibility of generating energy taking into account these differences in the pipeline has already been assessed, but no solution has been tested before.

### Possible difficulties for the implementation of the PoC:

The solution should be low-cost to implement and at proof-of-concept level, contemplating a less advanced development phase to validate the viability of the technology employed.

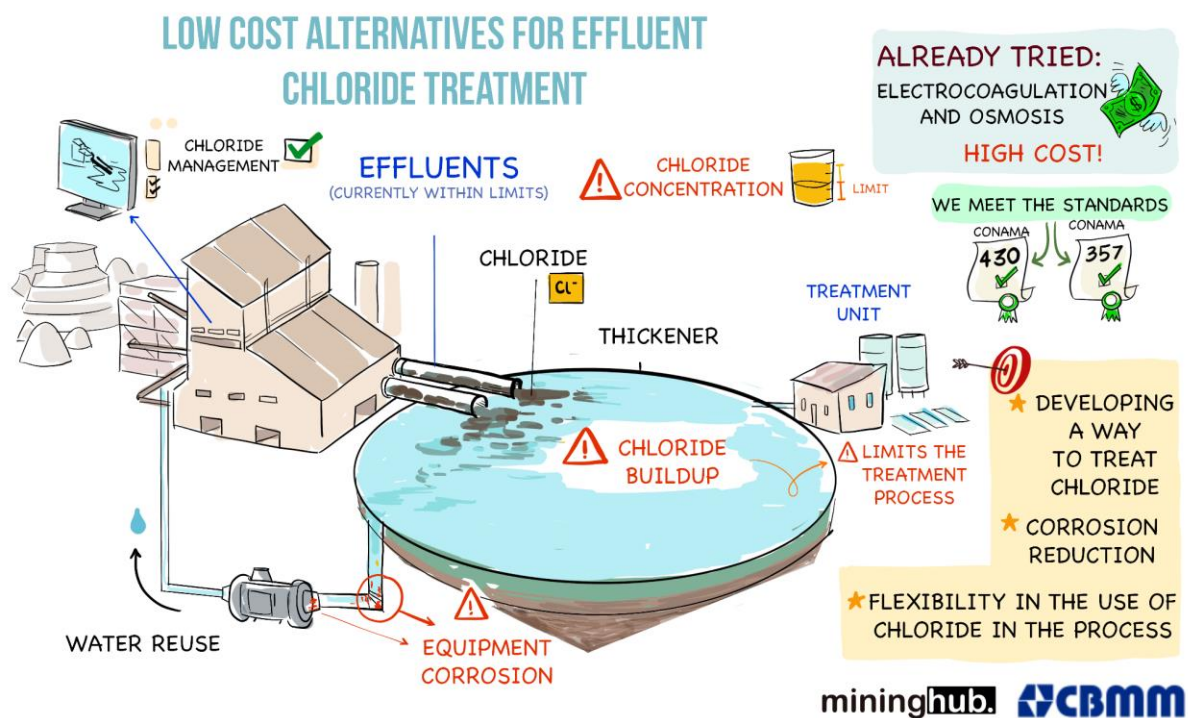


**Article 11** - In relation to the theme “WATER MANAGEMENT”, the challenges launched and the respective SPONSOR MINING COMPANIES are shown in Table 5.

*Table 5 - Water Management.*

CHALLENGE	MINING COMPANY
5.1 - Low cost alternatives for effluent chloride treatment	CBMM

**5.1 - Low cost alternatives for effluent chloride treatment**



**Sponsor Mining Company:** CBMM

**Challenge Description:**

Within the process of beneficiation of the mineral containing Niobium, there is the generation of industrial effluents that present chloride concentrations of 15 to 35 g/L. The effluents present low turbidity (10 to 50 NTU) and the metallic counter-ions, close to 5g/L. A process is sought that removes or reduces the concentration of chloride in the form of a complex, or a salt, or adsorbed on a solid matrix, favoring management and manipulation.





**Expected results:**

A chloride removal in industrial effluent equal to or greater than 80% is sought. A proposal with an alternative of material recycling or reuse (circularity), will be better assessed among the others.

**What we do not want or have already tested:**

Processes such as electrocoagulation and reverse osmosis have been tested in the past but have not shown satisfactory results.

**Possible difficulties for the implementation of the PoC:**

The high solubility of the salts formed by the chloride ion will be the greatest difficulty in implementing a low-cost technical solution.

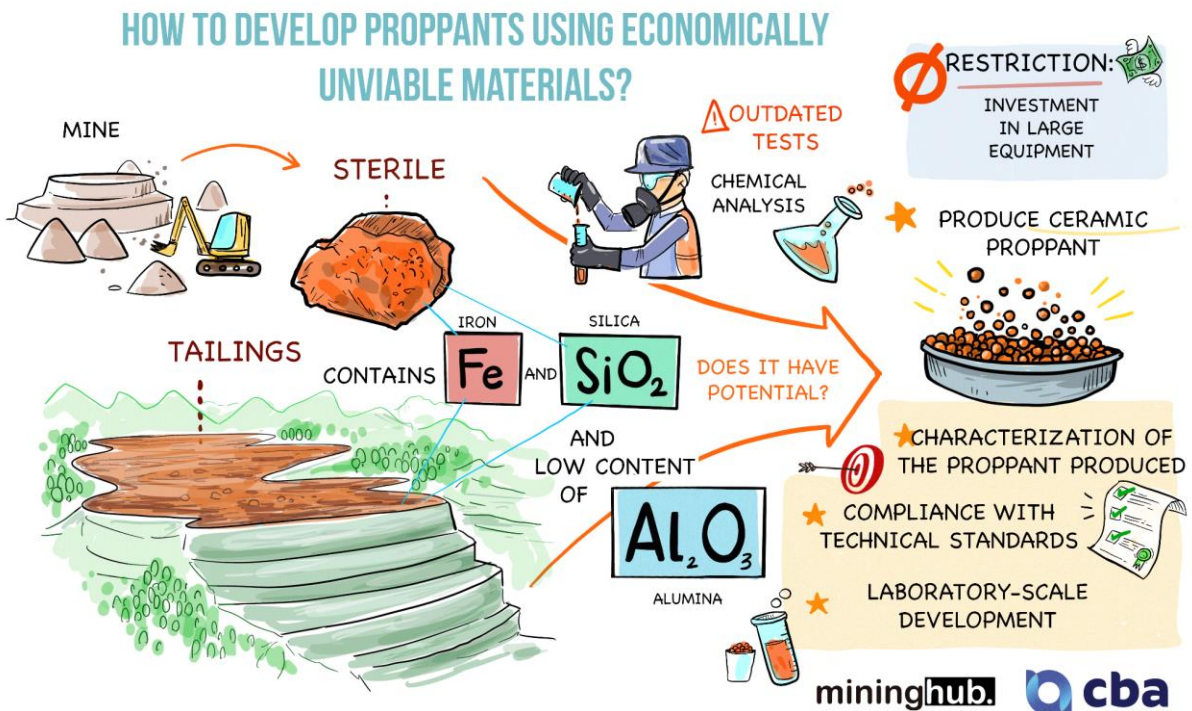
**Article 12** - Regarding the theme “TAILINGS AND WASTE MANAGEMENT”, the challenges launched and the respective SPONSOR MINING COMPANIES are shown in Table 6.

*Table 6 – Tailings and Waste Management.*

CHALLENGE	MINING COMPANY
6.1 - How to develop proppants using economically unviable materials?	CBA



## 6.1 - How to develop proppants using economically unviable materials?



**Sponsor Mining Company: CBA**

### Challenge Description:

Proppants are usually spherical and rounded materials of varying dimensions, and can be natural, such as sand, or synthetic ceramic materials, such as calcined bauxite-based proppants. The challenge is how to develop these proppants with the low-grade bauxite available at CBA's units and also assess the possibility of using the tailings to produce this material.

### Expected results:

Tests carried out on a laboratory scale for the validation of the technical route, results within the established parameters, in addition to the production of proppants in a lower volume.

### What we do not want or have already tested:

No solution has yet been developed for the proposed route.

**Possible difficulties for the implementation of the PoC:**

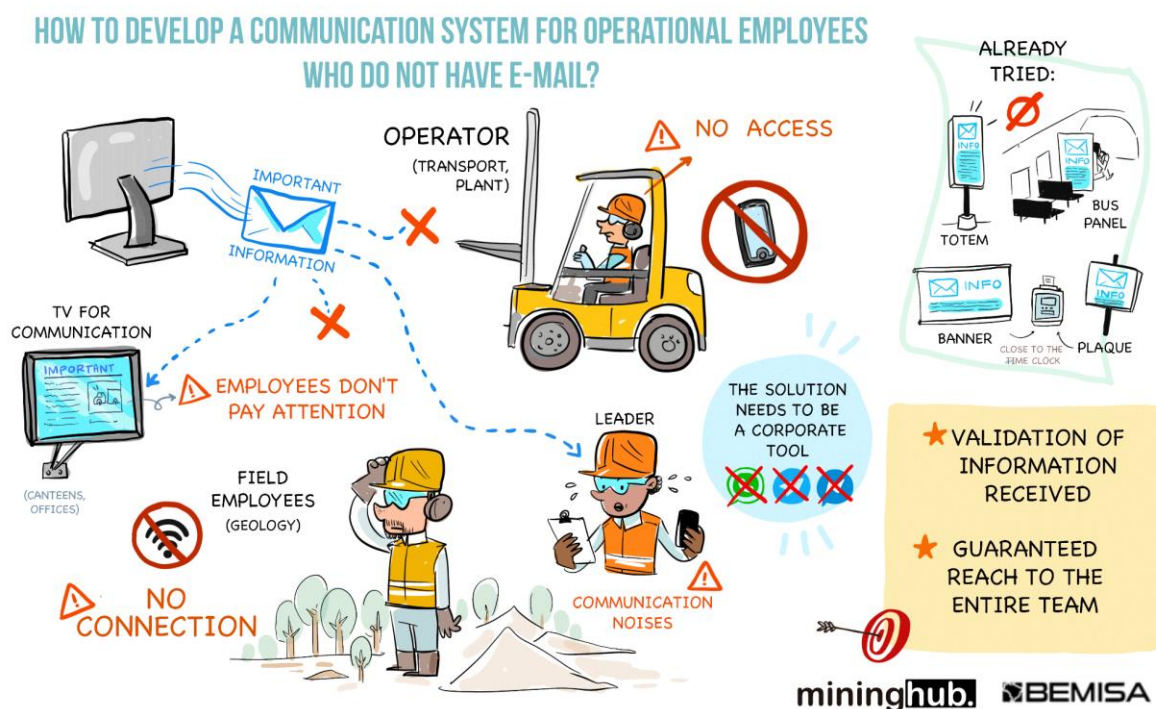
It is necessary to comply with the technical standards for the production of proppants and that the tests for the validation of the proposed route meet the necessary specifications.

**Article 13** - Regarding the theme “OCCUPATIONAL SAFETY AND HEALTH”, the challenges launched and the respective SPONSOR MINING COMPANIES are shown in Table 7.

*Table 7 – Occupational Safety and Health.*

CHALLENGE	MINING COMPANY
7.1 - How to develop a communication system for operational employees who do not have e-mail?	Bemisa
7.2 - How to carry out the monitoring of standardized activities and identify deviations in behavior?	Nexa Resources e Samarco

**7.1 - How to develop a communication system for operational employees who do not have e-mail?**





**Sponsor Mining Company:** Bemisa

**Challenge Description:**

Currently, we face difficulties in several situations in which it is necessary to communicate with operational employees who do not have a corporate email. Some attempts have already been made to resolve or minimize the problem.

**Expected results:**

We need to ensure that important information will be delivered and that it will reach all employees, using some corporate tool.

**What we do not want or have already tested:**

TVs, totems and posters in common areas have already been used, but employees just walk by and often do not pay attention. In addition, an informative banner has already been used on the bus that takes employees to the mine.

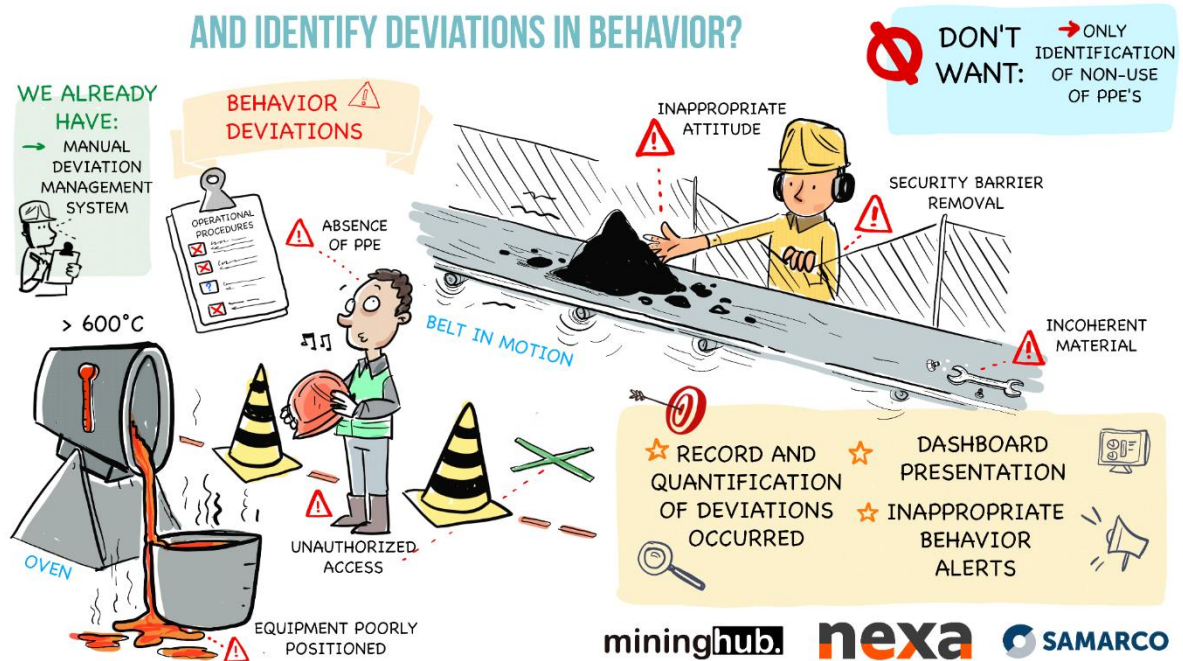
**Possible difficulties for the implementation of the PoC:**

First, we have difficulty ensuring that an important message or information reaches all employees. In some cases, the lack of internet connection signal can be a barrier. Communication noise between leaders and subordinates sometimes happens as some leaders claim to be overwhelmed and/or that communicating is not their job.



## 7.2 - How to carry out the monitoring of standardized activities and identify deviations in behavior?

### HOW TO CARRY OUT THE MONITORING OF STANDARDIZED ACTIVITIES AND IDENTIFY DEVIATIONS IN BEHAVIOR?



**Sponsor Mining Company:** Nexa Resources e Samarco

#### Challenge Description:

In mining and metallurgy operations, there are several activities that take place in accordance with mandatory operating procedures that must be followed and respected by everyone. In order to comply with these procedures and, consequently, ensure safety at our units, we seek technologies capable of monitoring activities and mapping behavioral deviations, generating indicators that will help in action plans and in raising workers' awareness.

#### Expected results:

Among the results, we hope that it will be possible to identify divergences in the operation procedures, quantify the frequency of their occurrence and thus make it possible to carry out an even more targeted training for the operation team.

#### What we do not want or have already tested:

Other solutions have not been tested.

#### Possible difficulties for the implementation of the PoC:





Among the possible technical difficulties, we can highlight IT infrastructure issues, low bandwidth for data transmission and very long procedures.

**Article 14** - The resources available by the SPONSOR MINING COMPANIES for the validation of the STARTUPS PoCs will be agreed by means of a contract to be signed between the parties at the beginning of the Proof of Concept stage.

**First paragraph** - Expenses related to participation in the M-START program, including transportation, accommodation and food, may be reimbursed within the total amount made available and previously agreed by the respective SPONSOR MINING COMPANY for the execution of the PoC.

**Second paragraph** - The disbursement plan for the resources for the PoC and reimbursement of expenses will be developed by STARTUPS and validated with the SPONSOR MINING COMPANIES during the Immersion phase, in the Selection stage.

**Third paragraph** - If any SPONSOR MINING COMPANY does not have the resources available to carry out the PoC and, even so, STARTUP chooses to work with this company, it will not be possible to claim any kind of reimbursement or payment by STARTUP in the future to SPONSOR MINING COMPANY in question.

**Article 15** - The place of development of the PoC will be defined by SPONSOR MINING COMPANY, and may undergo changes at its discretion.

**Article 16:** Each MINING COMPANY may be allocated to more than one challenge and, for this reason, may work with more than one STARTUP, executing more than one PoC, as long as in different challenges.

**Article 17:** A challenge may have more than one SPONSOR MINING COMPANY. In these cases, after the Selection process, each SPONSOR MINING COMPANY will execute a PoC with its respective selected STARTUP.

**Article 18:** STARTUPS are authorized to perform only one PoC per cycle, even if they are selected for more than one of the challenges launched. If this is the case, the STARTUP must choose which challenge/ mining company it will follow in the cycle in question.





## CHAPTER IV - APPLICATION

**Article 19** - The application process for a STARTUP is free and must be done by filling and sending the electronic form available, exclusively, through the **MINING HUB** website [www.mininghub.com.br](http://www.mininghub.com.br), during the period from **03/21/2022 to 04/25/2022**, at 11:59 pm (eleven, fifty-nine minutes), Brasília time.

**Article 20** - Responses to the registration form can be written in Portuguese or English.

**Article 21** -The applicant, when filling in the submission form, must always indicate, in a specific field, the respective theme and challenge in which wishes to execute the PoC.

**Article 22:** After the end of the registration deadline, the STARTUP will not be able to make changes to the submitted answers.

**First paragraph** – The STARTUP will be able to apply for more than one challenge in the cycle, as long as different registrations are made.

**Second paragraph** - If the STARTUP chooses to work in partnership with another company, this must be indicated on the registration form and must participate in all stages of the selection process, and, at the discretion of the Mining Hub, the partnership may be admitted or not.

**Third paragraph** - The applicant who has a solution within one of the 7 (seven) themes of the program, but who does not fit the challenges launched in this cycle, or who have proposals that do not adhere to one of the 7 (seven) themes, but which have innovative applicability for the mining sector, can register at [M-CONNECT](#) for future opportunities.

**Article 23** - The STARTUP representative indicated on the registration form as “project leader” must have sufficient autonomy to represent THE STARTUP in decision making throughout the selection process and will be responsible for all communication with the program.

**Article 24** - Requests for clarification and doubts must be sent up to 05 (five) business days prior to the closing date for receipt of applications, in Portuguese or English, to the e-mail [mstart8@mininghub.com.br](mailto:mstart8@mininghub.com.br)





## CHAPTER V - SELECTION

**Article 25** - STARTUPS that propose to develop solutions to the challenges presented by the MINING COMPANIES during the Proof of Concept stage will be selected.

**Single paragraph** - The selection of the STARTUPS participating in the program will be carried out by a panel, composed of the program management team and MINING COMPANY technicians, according to the criteria described in Chapter VI. It is also up to the panel the right not to select a STARTUP for one or more challenges, if they believe that there are no suitable proposals.

**Article 26** - The STARTUPS application analysis process consists of the following phases:

(i) Framework of the STARTUPS, considering the “Elimination Criteria, as described in article 28 - Chapter VI, below;

(ii) Technical screening of the STARTUPS 'proposals with the SPONSOR MINING COMPANIES for each challenge. In this stage, the first technical evaluation of the proposals will be made, based on the registration form filled out by the STARTUPS and in accordance with the “Classification Criteria”, as described in article 29 - Chapter VI, below;

(iii) Face-to-face and/ or online interviews, in PITCH format up to 5 minutes in duration, in which the STARTUP must present its proposal to SPONSOR MINING COMPANY for the challenge. Up to three (3) the STARTUPS may be selected for the Immersion phase, according to the “Classification Criteria”, as described in article 29 - Chapter VI, below;

(a) The non-attendance, without any justification, of any member of the candidate STARTUP on the date, time and place designated, even if it is the case of remote presentation, disclosed under the terms of this Notice, will be considered as withdrawal of its participation in this selection process. Justified cases will be analyzed and handled individually.

(iv) Immersion in person and/ or online, in which the objective is to provide the STARTUPS with access to SPONSOR MINING COMPANIES and the Mining Hub team to understand the details of the challenges and refine the PoC proposal, together. In the period of 1 (one) week, the SPONSOR MINING COMPANIES will





accompany the pre-selected the STARTUPS in the interview phase, providing data and clarifying doubts so that each one of them can refine the scope of the proposed solution for the challenge (s) which one (s) applied. At the end, up to 01 (one) STARTUP may be selected by SPONSOR MINING COMPANY to proceed to the Proof of Concept stage. The “Classification Criteria” are described in article 28 - Chapter VI, below.

- (a) During the Immersion phase, the participating STARTUPS will be asked to prepare additional documentation related to the implementation of the proposed PoC (physical and financial project schedules, presentation and other documentation). The selection of the STARTUP for the Proof of Concept stage will be made based on the documentation presented.
- (b) During the Immersion phase the participating STARTUPS must attend all the schedules requested, with the participation of at least one member.

**Article 27** - The result of the selection of the STARTUPS will be announced through the communication channels of the Mining Hub, such as the website [www.mininghub.com.br](http://www.mininghub.com.br), Instagram **hubdamineraçã**o and by e-mail until **June 20, 2022**. The date may be changed by decision and necessity of the **MINING HUB**.

**Single paragraph** - The STARTUPS not selected in the Technical Screening, Interviews and Immersion phases will receive feedback, exclusively in writing, through the e-mail [mstart8@mininghub.com.br](mailto:mstart8@mininghub.com.br), in up to 10 working days after the end of the Selection phase.

## CHAPTER VI - SELECTION CRITERIA

**Article 28** - STARTUPS will be evaluated according to the following Elimination Criteria:

- (i) Company Profile - The applicant company must fit as a STARTUP or SPIN-OFF, according to the definitions and criteria established in Article 3 - Chapter I.
- (ii) Themes and Proposed Challenges - The solution that does not meet the challenges proposed by the SPONSOR MINING COMPANIES will be eliminated, as mentioned in Chapter III;





(iii) Innovation - The solution presented by the STARTUP must have an innovative character for the MINING COMPANIES, that is, it must be tested in Proof of Concept. STARTUPS that present solutions routinely marketed or already tested previously in some mining company in Brazil or abroad, will be automatically excluded from the program.

**Article 29** - STARTUPS will be evaluated by the MINING COMPANIES, during the stages of Technical Screening, Interviews and Immersion, according to the “Classification Criteria” presented in Table 8 below.

*Table 8 - Classification criteria.*

Criterion	Objective
Team	Assess the team's ability to develop the solution and leverage the business.
Technological potential	Evaluate the effectiveness of the technologies used in the solution and their degrees of maturity.
Proposed solution	Assess whether the solution meets the MINING COMPANY demand (s).
Scalability	Assess whether the solution allows scalability for companies associated with the Mining Hub
Potential impact	Assess the potential impact of the solution on MINING COMPANIES (financial, social, environmental, etc.)
Resources for the PoC	Check the necessary resources, regardless of nature (financial, human or otherwise) for the development of the proof of concept of the solution.

**Sole paragraph** - In the Technical Screening stage, the solutions will be assessed by the SPONSOR MINING COMPANIES with scores from 0.5 to 5 in each of the criteria described in Table 8. In this process, up to 6 STARTUPS with the highest scores, given by the sum of the averages of the scores in each criterion, they will be classified for the Interview stage. In the Interview stage, based on the criteria described in Table 8, the SPONSOR MINING COMPANIES will have free choice of up to 3 STARTUPS for the Immersion stage. Finally, in the Immersion stage, only 1 STARTUP will be selected for the development of the PoC, and this choice will be guided again by the





criteria described in Table 8 and by the free decision of the respective SPONSOR MINING COMPANIES.

## CHAPTER VII - DURATION OF THE M-START PROGRAM

**Article 30** - The schedule with the main milestones of the **M-START** program is available on the MINING HUB website ([www.mininghub.com.br](http://www.mininghub.com.br)) as well as in Annex I.

**Article 31** - Dates may change due to the **MINING HUB**'s decision and need.

## CHAPTER VIII - OBLIGATIONS AND RESPONSIBILITIES

**Article 32** - The obligations of the STARTUPS are:

- (i). Comply with all the provisions present in this Public Notice;
- (ii) Deliver the documents requested to register new “suppliers”, demanded by SPONSOR MINING COMPANY for the challenge and within the established deadlines;
- (iii) Present, when requested, the Legal Register and Bank Account – the STARTUP or the SPIN-OFF must have the National Register of Legal Entities (CNPJ), in case of Brazilian nationality or legal regulations related to their respective nationality, such as Tax Identification Number (NIF), case of Portugal, as well as current account in the name of the company for the signature of the contracts;
- (iv). Participate in the actions provided for in each phase of **M-START**, as well as provide all the necessary information and documents required by the SPONSOR MINING COMPANY and or by the Mining Hub team;
- (v). Attend, compulsorily, the events and activities of the M-START CYCLE 8, presented in this notice and/or communicated via [mstart8@mininghub.com.br](mailto:mstart8@mininghub.com.br), with at least 01 (one) representative of the STARTUP;
- (vi) the STARTUP, when enrolling in this program, declares that it does not use and does not have, in its entire production chain, directly or indirectly, slave labor, in degrading conditions, workers subjected or forced to illegal conditions under the employer's domain, work by minors under 16 (sixteen), except as an apprentice from





the age of 14 (fourteen), as established in article 7, item XXXIII of the Federal Constitution, as well as not allowing any type of discrimination and respecting freedom of association, under penalty of being immediately eliminated by the MINING HUB, without the need to send prior notification, being the STARTUP, in case of violation of this clause, subject to compensation of losses and damages caused and the penalties provided for by law;

(vii) The STARTUP, when enrolling in this program, declares, to fully observe Law nº. 12,846/ 2013 (“Brazilian Anti-Corruption Law”) and declares that it is aware of all the terms and definitions provided in the Brazilian Anti-Corruption Law, which defines as a harmful act to promise, offer or give, directly or indirectly, an undue advantage to a public agent or the third person related to it, among others. In case of breach of said Law, it will be responsible for any losses, damages or liabilities caused, in addition to the penalties provided for by law.

**Article 33** - The STARTUP declares that it is fully qualified to use the technology used by the proposed solution for the respective challenge during the development of the PoC, owning its characteristics or being duly licensed to use them.

**Article 34** - The STARTUP declares that it does not have, in the composition of its capital stock or in its membership/management/employees/service providers, people with a potential conflict of interest in relation to the mining companies associated with the Mining Hub.

## **CHAPTER IX - TERMINATION OF THE RELATIONSHIP BETWEEN THE STARTUPS AND THE MINING COMPANIES OF THE M-START CYCLE 8**

**Article 35** - The relationship between the M-START program and the STARTUPS will be considered terminated upon prior notification, in the following cases:

- (i) Elimination in the selection phases;
- (ii) End of program duration term;
- (iii) If there is a violation of any clause of this Public Notice;
- (iv) If the MINING HUB significantly changes the main features of M-START and the STARTUP does not agree with these changes;





- (v) If the insolvency, bankruptcy or judicial recovery of STARTUP and its members is verified;
- (vi) If there is a temporary transfer of activity from STARTUP;
- (vii) At the initiative of STARTUP, duly justified;
- (viii) At the initiative of the MINING HUB, duly justified;
- (ix) At the initiative of the SPONSOR MINING COMPANY, duly justified;

**First paragraph:** The STARTUP that does not have available time or does not respect attendance during the program, which will be carried out in person, at the headquarters of the Mining Hub and/ or associated Mining Companies, or online, will be eliminated. The eliminated will be the sole and exclusive responsible for any costs spent in this period.

**Second paragraph** - After the disclosure of the selection result, each STARTUP will have up to 7 calendar days to communicate without prejudice, via e-mail [mstart8@mininghub.com.br](mailto:mstart8@mininghub.com.br), the withdrawal regarding participation in M-Start Cycle 8. After this period, the STARTUP that, for any reason, gives up participating in the program will be unable to apply for another MINING HUB initiative for 6 (six) months, counting from the date of withdrawal.

**Third paragraph:** If the SPONSOR MINING COMPANY chooses to leave the program, it must present its justification in writing to the Mining Hub Board of Directors.

**Fourth paragraph:** Any financial expenses incurred to the STARTUP or the Mining Hub, within the period referring to that cycle in which the SPONSOR MINING COMPANY gave up, shall be reimbursed in full by the quitting mining company to the first two cited in this paragraph.

## CHAPTER X - POSSIBLE BENEFITS FOR THE SELECTED STARTUPS

**Article 36** - The following benefits can be made available to the STARTUPS selected for the Proof of Concept stage:

- Possibility of investment to develop the projects together with SPONSOR MINING COMPANIES for validation of the POCs;
- Possibility of access to the infrastructure and teams of the associated Mining Companies, under favorable and safe conditions for the parties involved;







- Working together with professionals in the mining sector;
- Working together with the program management team;
- Methodology for carrying out Proofs of Concept: technical visits and development monitoring routines.
- Presentation of the partial results of the Proofs of Concept for Mining Companies associated with the Mining Hub.
- At the end of the program, and at their sole discretion, the MINING COMPANIES, if they consider it feasible for their business, will be able to invest in the operational scale of the solutions, as well as establish partnerships to seek funding, purchase or distribute the STARTUPS' products and services.
- The STARTUP participating in the M-START is eligible to participate in the M-GROWTH program.

## CHAPTER XI - GENERAL PROVISIONS

**Article 37** - It is hereby clearly and established that all rights related to the intellectual property arising from the work performed as a result of this Notice shall be owned by the STARTUP, which shall be entitled to the free disposal of such rights.

**Article 38** - It is clear and established from now on that the participation and / or selection in the **M-START CYCLE 8** does not constitute any kind of bond, operating agreement, joint venture or association between the participant STARTUP (selected or not), the **Mining Hub** and others involved in the program. The participating STARTUP (selected or not) and others involved in the program are independent entities among themselves, that no provision of this Public Notice or the program shall be construed to create any corporate, labor or tax relationship between the parties and that there is not or will not be any solidarity or subsidiarity of any nature between the parties.

**Article 39** - It is hereby made clear and established that the participation in the program and the eventual signing of a contract with the SPONSOR MINING COMPANIES does not generate any kind of employment relationship. The STARTUP undertakes to exclude the Mining Hub and others involved from any liability in labor / social security lawsuits eventually brought by any of its employees, as well as to bear all costs incurred in such lawsuits, including, but not limited to, attorney's fees.





**Article 40** - It is hereby clearly established that the management team may alter this Public Notice at any time if necessary for the good and regular course of the Program established herein.

**Article 41** - It is clear and established now that all STARTUPS registered in M-Start Cycle 8 authorize the Mining Hub to eventually make contact about future opportunities in other areas of operation of the Mining Hub itself. The STARTUPS may also register a new solution in the [M-CONNECT](#) program.

**Article 42** - It is hereby made clear that if there are any questions about this Public Notice, the MINING HUB is available to answer them by e-mail at [mstart8@mininghub.com.br](mailto:mstart8@mininghub.com.br).

**Article 43** - The participants give Mining Hub the right to use their image, text and/or voice in any type of material, free of charge and without exclusivity. In return, the Mining Hub undertakes to use the image of the participants without making any changes to the physiognomy and, further, not to use the image in a derogatory manner, or that may represent, in any form, some kind of violation of moral damage.

**Article 44** - The Mining Hub clarifies that, in the programs conducted by its initiative, the rules provided in the Law for the Defense of Competition (Law No. 12.529/11) are applied, in particular with regard to art. 36 and following, which determines as violations of the economic order, among others, all and any act related to (i) discussion, negotiation, agreement, collusion, manipulation or adjustment on prices, production and division of market segments; (ii) promotion, obtaining and/or influence to adopt uniform commercial conduct (iii) limiting the access of new companies to the market; (iv) preventing the access of competitors to the sources of inputs, raw materials, distribution channels or technology; (v) discriminating purchasers or suppliers of goods or services by means of the differentiated fixing of prices or operational conditions; and (vi) abusive exploitation of industrial property rights, intellectual property, technology or trademark. In this regard, Mining Hub constantly applies measures to mitigate any competition risks arising from the interactions related to the programs, including, among them, but not limited to, the establishment of Antitrust Protocol with the Mining Companies and the Startups eventually selected for its programs.





**Single paragraph:** Upon completion of registration, the holder of the personal data entered in this document expressly and unequivocally authorizes the MINING HUB to process such personal data, under the terms of Law No. 13.709/18 (LGPD - General Law of Personal Data Protection) and the Privacy Policy of the MINING HUB, for the purposes of (i) identifying and contacting the holder of personal data for the development of a business relationship with the MINING HUB; (ii) sending publicity, advertising, mailings, virtual or physical cards motivated by commemorative dates, including the holder's birthday, digital and printed magazines, or any other advertising materials, customized or not to the holder's profile, related to the products, services and /or events offered by the MINING HUB and/or its business partners; (iii) using in research, studies, projects and programs developed by the MINING HUB;

**Article 45** - The parties involved undertake to treat as secret all confidential information related to the sponsor mining companies that have been revealed to them, and undertake not to reveal it to third parties without their knowledge and consent, under penalty of civil and criminal liability.

"Confidential Information" shall not be deemed as that which is in the public domain before being disclosed or made available by the parties prior to the signing of the contract between STARTUP and SPONSOR MINING COMPANY, or that which is made public by the National Institute of Industrial Property - INPI or by the competent body at international level.

**Article 46** - The e-mail [mstart8@mininghub.com.br](mailto:mstart8@mininghub.com.br) is established as the program's official communication channel.





## NOTICE M-START CYCLE 8 - CHALLENGE MINING HUB

### CHAPTER XII - THE PROGRAM

**Article 47** - M-START CYCLE 8 - CHALLENGE MINING HUB is a challenge launched by the Mining Hub in partnership with the IBRAM Commitment Letter Working Group, based on the observation that the MINING HUB itself needs to innovate in the way it supports entrepreneurs and startups after the development of Proofs of Concept (PoCs).

**Single paragraph** - The purpose of this Public Notice is to define the rules and conditions for participation in the **M-START CYCLE 8 - CHALLENGE MINING HUB** program.

**Article 48** - In order to seek innovative approaches to scale solutions in the mining sector, **M-START CYCLE 8 - MINING HUB CHALLENGE** has as main objective to prospect and select companies, as qualified in Article 3 of this chapter, and to support the construction of a business scale model for the Mineral Sector.

**Article 49** - Participation in the **M-START CYCLE 8 - MINING HUB CHALLENGE** program is aimed at consulting companies, investment funds, and startup accelerators that have technical aptitude in scopes similar to that of this public notice.

**First paragraph**– Companies may submit their proposals individually or through a consortium, and during submission, in this case, they must inform the leading company and the role of each one in relation to the project presented.

**Second paragraph**– The technical aptitude must be proven by means of certificates of technical capacity issued in the name of the applicant and containing projects similar to the present public notice, to be fixed in the proposal submission form.

**Article 50** - The present challenge will be supported by the Mining Companies Vale and Nexa Resources, which will directly lead the development of the project in question with the contracted company and with support from the Mining Hub Strategic Planning Committee. It is also worth mentioning that the mining companies that make up the Innovation GT of the Commitment Charter and which are associated with the Mining Hub, will support the development of the project.





## CHAPTER XIII - PROGRAM STAGES

**Article 51** - The main stages of the **M-START CYCLE 8 CHALLENGE MINING HUB** are shown and detailed below:

- Registration: from 03/21/2022 to 04/25/2022 at 23:59 BRT:

The candidate COMPANY or consortium leader must submit its proposal through the online form available through the website [www.mininghub.com.br](http://www.mininghub.com.br).

- Selection: from 04/26/2022 to 06/24/2022:

The evaluation and selection of the proposals will be made by a panel composed of the program management team and technicians from the MINING COMPANIES, according to the rules established in this Public Notice. More information about the Selection stage can be found in Chapter XVI of this Public Notice.

- Solution Design: from 06/21/2022 to 12/15/2022:

Period in which the COMPANY will sign the contract with the SPONSOR MINING COMPANY and will also develop the detailed methodology, according to the work proposal presented and validated in the Immersion phase, carried out during the Selection stage.

- Contract signing from 06/21/2022 to 07/22/2022
- Solution Design from 07/23/2022 to 11/16/2022
- Demoday on 12/15/2022

At the end of the Solution Design stage, the COMPANY that has its PoC validated will participate in the Demoday, closing event of the program cycle, in which the COMPANY will present the results of the Solution Design.

**First Paragraph** - The execution activities of the Solution Design will only start after the conclusion of the contract signature process by all parties involved - COMPANY, MINING COMPANY and IBRAM.





**Second Paragraph** - At the end of the Solution Design stage, the selected COMPANY must present a detailed executive summary containing at least the method developed, main stages, deliverables, actors involved and roles and responsibilities.

**Third Paragraph** - The method developed will be the sole and exclusive property of the Mining Hub and Sponsor Mining Companies, which may choose to perform the proposed program with the applicant company, with its own or outsourced team.

**Fourth Paragraph** - The schedule of activities for the main stages of the **M-START CYCLE 8 CHALLENGE MINING HUB** program is available for consultation on the website [www.mininghub.com.br/en/programas/m-start](http://www.mininghub.com.br/en/programas/m-start), as well as in ANNEX I of this Public Notice.

#### CHAPTER XIV - CHALLENGES AND SPONSOR MINING COMPANIES

**Article 52** - In article 53 of this Notice, we describe the challenge proposed by by the Mining Hub in partnership with the IBRAM Commitment Letter Working Group. In addition, Annex III presents the picture that aims to promote a better understanding of the key information of the problem presented.

**Article 53** - Regarding the theme "M-Start Cycle 8 - Challenge Mining Hub" the challenge launched, and the respective SPONSOR MINING COMPANIES are shown in Table 9.

*Table 9 – M-Start Cycle 8 - Challenge Mining Hub*

CHALLENGE	MINING COMPANY
How to scale up innovative startups solutions in the mining sector?	Nexa Resources and Vale



How to scale up innovative startups solutions in the mining sector?

HOW TO SCALE UP INNOVATIVE STARTUPS SOLUTIONS IN THE MINING SECTOR?



Sponsor Mining Company: Nexa Resources and Vale.

Challenge Description:

Boost the Post-PoC of solutions developed by Miningtechs - startups in the Mineral Sector. The challenge is to cross the “Valley of Death”.

How to push startups to replicate the proposed solutions, overcome this stage that is considered the most complex in the startups' growth journey.

Look for ways to accelerate proven solutions that have its origins overcoming the challenges of the Mineral Sector. Meaning to make these solutions gain commercial space, so they can be replicated in other mining companies or companies in sectors other than mining. Miningtechs that offer these solutions are expected to become larger and longer-lasting businesses, bringing sustainability to the mining innovation sector.

It is essential that we are able to test the proposal developed for this challenge, during the 8th Cycle schedule, with startups from our ecosystem (sample to be defined), which have developed successful PoC's, within a controlled environment, evaluating the final result and comparing with results without the applied method.



In other words, a startup that participated in one of the Mining Hub's cycles and did not scale its operation. If this same company had applied the proposed method for growth, what would the simulated result have been?

**Expected results:**

Obtain a method/proposal validated in practical cases that can guide and support Miningtechs in their growth journey. This method should create short- and long-term value for Miningtechs, and can go through changes within their business to how they are perceived by the market.

For the Mining Hub, a reflection on the adequacy of the M-Start/M-Growth program, the need for a new program, evaluating new steps and even creating a new program are part of the topics to be accessed by the potential solutions that the challenge may present and cover.

For mining companies, reflection of procedures, posture for business with startup, responsive business processes for the startup environment.

As quantitative results, it is expected to see the number of Miningtechs evaluated and which of these are likely to have their business expanded.

The creation of value can be measured by considering, as a reference, a review of a startup valuation or even the raising or commitment of fundraising to business growth. In addition to pointing out the type of resource that should be sought with or without industry support (or offered) for each phase of the business, as well as a general guide for future business.

**What we do not want or have already tested:**

There are no known tested solutions for Miningtechs, however solutions for scaling, leveraging, expansion or other ways to strengthen the mining innovation sector through strengthening Miningtechs are desirable.

Our main program covers up to the PoC stage for our challenges. Breaking this stage, and increasing the possibility of business, is the great reflection for this challenge.

**Possible difficulties for the implementation of the PoC:**

Time to be able to apply the solution with Miningtechs that have developed successful PoCs. This difficulty is due to the short term of the M-Start program of about 4 months.







**Article 54** - The resources available by the SPONSOR MINING COMPANIES for the validation of the COMPANY project will be agreed by means of a contract to be signed between the parties at the beginning of the Solution Design.

**First paragraph** - Expenses related to participation in the M-START program, including transportation, accommodation and food, may be reimbursed within the total amount made available and previously agreed by the respective SPONSOR MINING COMPANY for the execution of the PoC.

**Second paragraph** - The disbursement plan for the resources for the PoC and reimbursement of expenses will be developed by COMPANIES and validated with the SPONSOR MINING COMPANIES during the Immersion phase, in the Selection stage.

## CHAPTER XV - APPLICATION

**Article 55** - The application process for a COMPANY is free and must be done by filling and sending the electronic form available, exclusively, through the **MINING HUB** website [www.mininghub.com.br](http://www.mininghub.com.br), during the period from **03/21/2022 to 04/25/2022**, at 11:59 pm (eleven, fifty-nine minutes), Brasília time.

**Article 56** - Responses to the registration form can be written in Portuguese or English.

**Article 57** - After the end of the registration deadline, the COMPANY will not be able to make changes to the submitted answers.

**Single paragraph** - If the COMPANY chooses to work in partnership with another company (consortium), this must be indicated on the application form and must participate in all stages of the selection process.

**Article 58** - The COMPANY representative indicated on the registration form as “project leader” must have sufficient autonomy to represent the COMPANY (the COMPANIES, in the case of the consortium) in decision making throughout the selection process and will be responsible for all communication with the program.

**Article 59** - Requests for clarification and doubts must be sent up to 05 (five) business days prior to the closing date for receipt of applications, in Portuguese or English, to the e-mail [mstart8@mininghub.com.br](mailto:mstart8@mininghub.com.br)





## CHAPTER XVI - SELECTION

**Article 60** - COMPANIES that propose to develop solutions to the M-Start Cycle 8 - Challenge Mining hub presented by the MINING COMPANIES during the Solution Design stage will be selected.

**Single paragraph** - The selection of the COMPANIES participating in the program will be carried out by a panel, composed of the program management team and MINING COMPANY technicians, according to the criteria described in Chapter XVII. It is also up to the panel the right not to select a COMPANY for the challenge, if they believe that there are no suitable proposals.

**Article 61** - The COMPANIES application analysis process consists of the following phases:

(i) Framework of the COMPANIES, considering the “Elimination Criteria, as described in article 63 - Chapter XVII, below;

(ii) Technical screening of COMPANIES proposals with the Mining Hub and SPONSOR MINING COMPANIES involved in the challenge. In this stage, the first technical evaluation of the proposals will be made, based on the registration form filled out by the COMPANIES and in accordance with the “Classification Criteria”, as described in article 64 - Chapter XVII, below;

(iii) Face-to-face and/ or online interviews, in which the COMPANY must present its proposal to Mining Hub. Up to three (3) the STARTUPS may be selected for the Immersion phase, according to the “Classification Criteria”, as described in article 64, below;

(a) The non-attendance, without any justification, of any member of the candidate COMPANY on the date, time and place designated, even if it is the case of remote presentation, disclosed under the terms of this Notice, will be considered as withdrawal of its participation in this selection process. Justified cases will be analyzed and handled individually.

(iv) Immersion in person and/ or online, in which the objective is to provide the COMPANIES with access to the Mining Hub team and and its partners to understand the details of the challenge and refine the Solution Design proposal, together. In the





period of 1 (one) week, the Mining Hub will accompany the pre-selected COMPANIES in the interview phase, providing data and clarifying doubts so that each one of them can refine the scope of the proposed solution for the challenge. At the end, up to 01 (one) COMPANY may be selected by Mining Hub to proceed to the Solution Design.

(a) During the Immersion phase, the participating COMPANIES will be asked to prepare additional documentation related to the implementation of the proposed PoC (physical and financial project schedules, presentation and other documentation). The selection of COMPANY for the Solution Design stage will be made based on the documentation presented.

(b) During the Immersion phase the participating COMPANIES must attend all the schedules requested, with the participation of at least one member.

**Article 62** - The result of the selection of COMPANIES will be announced through the communication channels of the Mining Hub, such as the website [www.mininghub.com.br](http://www.mininghub.com.br), Instagram **hubdamineraçã**o and by e-mail until **June 20, 2022**. The date may be changed by decision and necessity of the **MINING HUB**.

**Single paragraph** - COMPANIES not selected in the Technical Screening, Interviews and Immersion phases will receive feedback, exclusively in writing, through the e-mail [mininghub@mininghub.com.br](mailto:mininghub@mininghub.com.br), in up to 10 working days after the end of the Selection phase.

## CHAPTER XVII - SELECTION CRITERIA

**Article 63** - COMPANIES will be evaluated according to the following Elimination Criteria:

(i) Company Profile - The applicant company must fit as consulting companies, investment funds, or startup accelerators, according to the definitions and criteria established in Article 49 - Chapter XII.

(ii) Proposed Challenges - The solution that does not meet the challenge proposed by the Mining Hub will be eliminated, as mentioned in Chapter XIV;

(iii) Technical skills – The applicant that does not present at least 3 certificates of technical capacity on its behalf containing the performance of similar services, that is,





development of programs for the implementation of innovative projects on a pilot scale, will be eliminated.

**Article 64** - COMPANIES will be evaluated by the Mining Hub, during the stages of Technical Screening, Interviews and Immersion, according to the “Classification Criteria” presented in Table 10 below.

*Table 10 - Classification criteria.*

Criterion	Objective
Team	Assess the team's ability to develop and implement the proposed solution.
Methodology presented	Assess whether the methodology meets the demands of the Mining Hub. At least the following should be considered: i) Diagnosis of the startups, with validated proofs of concept, aiming to define the main limiting factors for growth in the sector; ii) main KPIs for measuring program success; iii) Benchmarking with models from other sectors and ecosystems that already successfully leverage demand; iv) Design of a model for Scale Up of the startups in the mining sector; v) Detailing the structure and resources needed to enable a Scale Up class with up to 5 supported startups.
Scalability	Assess whether the solution allows scalability for companies associated with the Mining Hub
Potential impact	Assess the potential impact of the solution on MINING COMPANIES (financial, social, environmental, etc.)
Investment	Assess the investment needed to implement the pilot program and what the applicant can give in return.

**Single paragraph** - In the Technical Screening stage, the solutions will be assessed by the SPONSOR MINING COMPANIES and SUPPORTERS with scores from 0.5 to 5 in each of the criteria described in Table 10. In this process, up to 10 COMPANIES with the highest scores, given by the sum of the averages of the scores in each criterion, they will be classified for the Interview stage. In the Interview stage, based on the criteria described in Table 10, the SPONSOR MINING COMPANIES and SUPPORTERS will have free choice of up to 3 COMPANIES for the Immersion stage. Finally, in the Immersion stage, only 1 COMPANY will be selected for the development





of the PoC, and this choice will be guided again by the criteria described in Table 10 and by the free decision of the respective SPONSOR MINING COMPANIES and SUPPORTERS.

## CHAPTER XVIII - DURATION OF THE M-START CYCLE 8 - CHALLENGE MINING HUB PROGRAM

**Article 65** - The schedule with the main milestones of the **M-START CYCLE 8 - CHALLENGE MINING HUB** program is available on the MINING HUB website ([www.mininghub.com.br](http://www.mininghub.com.br)) as well as in Annex I.

**Article 66** - Dates may change due to the **MINING HUB's** decision and need.

## CHAPTER XIX - OBLIGATIONS AND RESPONSIBILITIES

**Article 66** - The obligations of the applicants are:

- (i). Comply with all the provisions present in this Public Notice;
- (ii) Deliver the documents requested to register new “suppliers”, demanded by Mining Hub for the challenge and within the established deadlines;
- (iii) Present, when requested, the Legal Register and Bank Account – The COMPANY must have the National Register of Legal Entities (CNPJ), in case of Brazilian nationality or legal regulations related to their respective nationality, such as Tax Identification Number (NIF), case of Portugal, as well as current account in the name of the company for the signature of the contracts;
- (iv). Participate in the actions provided for in each phase of **M-START CYCLE 8 - CHALLENGE MINING HUB**, as well as provide all the necessary information and documents required by the SPONSOR MINING COMPANY and or by the Mining Hub team;
- (v) Attend, compulsorily, the events and activities of the M-START CYCLE 8, presented in this notice and/or communicated via [mininghub@mininghub.com.br](mailto:mininghub@mininghub.com.br), with at least 01 (one) representative of the COMPANY;
- (vi) The COMPANY, when enrolling in this program, declares that it does not use and does not have, in its entire production chain, directly or indirectly, slave labor, in





degrading conditions, workers subjected or forced to illegal conditions under the employer's domain, work by minors under 16 (sixteen), except as an apprentice from the age of 14 (fourteen), as established in article 7, item XXXIII of the Federal Constitution, as well as not allowing any type of discrimination and respecting freedom of association, under penalty of being immediately eliminated by the MINING HUB, without the need to send prior notification, being the COMPANY, in case of violation of this clause, subject to compensation of losses and damages caused and the penalties provided for by law;

(vii) The COMPANY, when enrolling in this program, declares, to fully observe Law nº. 12,846/ 2013 (“Brazilian Anti-Corruption Law”) and declares that it is aware of all the terms and definitions provided in the Brazilian Anti-Corruption Law, which defines as a harmful act to promise, offer or give, directly or indirectly, an undue advantage to a public agent or the third person related to it, among others. In case of breach of said Law, it will be responsible for any losses, damages or liabilities caused, in addition to the penalties provided for by law.

**Article 68** - The COMPANY declares that it is fully qualified to use the technology used by the proposed solution for the respective challenge during the development of the PoC, owning its characteristics or being duly licensed to use them.

**Article 69** - The COMPANY declares that it does not have, in the composition of its capital stock or in its membership/management/employees/service providers, people with a potential conflict of interest in relation to the mining companies associated with the Mining Hub.

## **CHAPTER XX - TERMINATION OF THE RELATIONSHIP BETWEEN THE COMPANY AND THE MINING COMPANIES OF THE M-START CYCLE 8 - CHALLENGE MINING HUB**

**Article 70** - The relationship between the **M-START CYCLE 8 - CHALLENGE MINING HUB** program and the applicant will be considered terminated upon prior notification, in the following cases:

- (x) Elimination in the selection phases;
- (xi) End of program duration term;





- (xii) If there is a violation of any clause of this Public Notice;
- (xiii) If the MINING HUB significantly changes the main features of M-START CYCLE 8 - CHALLENGE MINING HUB and the COMPANY does not agree with these changes;
- (xiv) If the insolvency, bankruptcy or judicial recovery of COMPANY and its members is verified;
- (xv) If there is a temporary transfer of activity from COMPANY;
- (xvi) At the initiative of COMPANY, duly justified;
- (xvii) At the initiative of the MINING HUB, duly justified;

**First paragraph:** The COMPANY that does not have available time or does not respect attendance during the program, which will be carried out in person, at the headquarters of the Mining Hub and/ or associated Mining Companies, or online, will be eliminated. The eliminated will be the sole and exclusive responsible for any costs spent in this period.

**Second paragraph -** After the disclosure of the selection result, each COMPANY will have up to 7 calendar days to communicate without prejudice, via e-mail [mininghub@mininghub.com.br](mailto:mininghub@mininghub.com.br), the withdrawal regarding participation in M-Start Cycle 8.

**Third paragraph:** If the SPONSOR MINING COMPANY chooses to leave the program, it must present its justification in writing to the Mining Hub Board of Directors.

**Fourth paragraph:** Any financial expenses incurred to the COMPANY or the Mining Hub, within the period referring to that cycle in which the SPONSOR MINING COMPANY gave up, shall be reimbursed in full by the quitting mining company to the first two cited in this paragraph.

## CHAPTER XXI - POSSIBLE BENEFITS FOR THE SELECTED COMPANIES

**Article 71 -** The following benefits can be made available to the COMPANY selected for the Solution Design stage:

- Possibility of investment to develop the proposed Solution Design;
- Possibility of becoming the operating partner of the proposed Solution Design;





- Possibility of access to the infrastructure and teams of the associated Mining; Companies, under favorable and safe conditions for the parties involved;
- Working together with professionals in the mining sector;
- Working together with the program management team.

## CHAPTER XXII - GENERAL PROVISIONS

**Article 72** - It is clear and established from now on that the participation and / or selection in the **M-START CYCLE 8 - CHALLENGE MINING HUB** does not constitute any kind of bond, operating agreement, joint venture or association between the participant COMOPANY (selected or not), the **Mining Hub** and others involved in the program. The participating COMPANY (selected or not) and others involved in the program are independent entities among themselves, that no provision of this Public Notice or the program shall be construed to create any corporate, labor or tax relationship between the parties and that there is not or will not be any solidarity or subsidiarity of any nature between the parties.

**Article 73** - It is hereby made clear and established that the participation in the program and the eventual signing of a contract with the SPONSOR MINING COMPANIES does not generate any kind of employment relationship. The COMPANY undertakes to exclude the Mining Hub and others involved from any liability in labor / social security lawsuits eventually brought by any of its employees, as well as to bear all costs incurred in such lawsuits, including, but not limited to, attorney's fees.

**Article 74** - It is hereby clearly established that the management team may alter this Public Notice at any time if necessary for the good and regular course of the Program established herein, through errata publication.

**Article 75** - It is hereby made clear that if there are any questions about this Public Notice, the MINING HUB is available to answer them by e-mail at [mininghub@mininghub.com.br](mailto:mininghub@mininghub.com.br).

**Article 76** - The participants give Mining Hub the right to use their image, text and/or voice in any type of material, free of charge and without exclusivity. In return, the Mining Hub undertakes to use the image of the participants without making any changes to the physiognomy and, further, not to use the image in a derogatory manner, or that may represent, in any form, some kind of violation of moral damage.







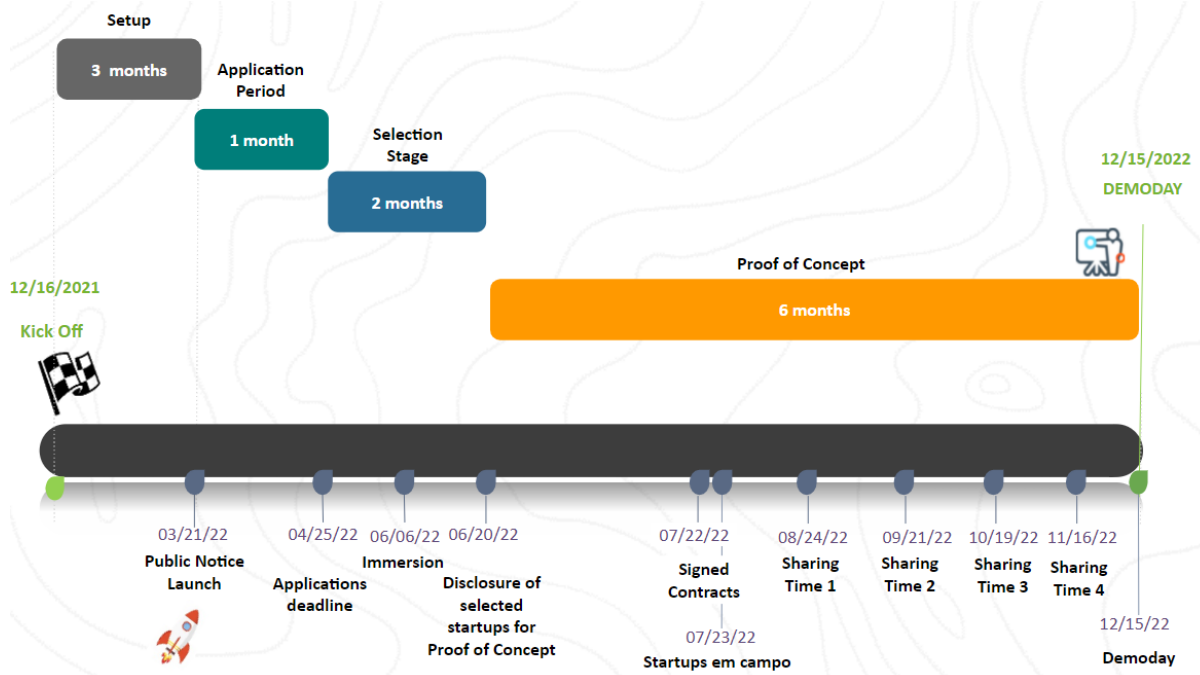
**Article 77** - The Mining Hub clarifies that, in the programs conducted by its initiative, the rules provided in the Law for the Defense of Competition (Law No. 12.529/11) are applied, in particular with regard to art. 36 and following, which determines as violations of the economic order, among others, all and any act related to (i) discussion, negotiation, agreement, collusion, manipulation or adjustment on prices, production and division of market segments; (ii) promotion, obtaining and/or influence to adopt uniform commercial conduct (iii) limiting the access of new companies to the market; (iv) preventing the access of competitors to the sources of inputs, raw materials, distribution channels or technology; (v) discriminating purchasers or suppliers of goods or services by means of the differentiated fixing of prices or operational conditions; and (vi) abusive exploitation of industrial property rights, intellectual property, technology or trademark. In this regard, Mining Hub constantly applies measures to mitigate any competition risks arising from the interactions related to the programs, including, among them, but not limited to, the establishment of Antitrust Protocol with the Mining Companies and the Startups eventually selected for its programs.

**Single paragraph:** Upon completion of registration, the holder of the personal data entered in this document expressly and unequivocally authorizes the MINING HUB to process such personal data, under the terms of Law No. 13.709/18 (LGPD - General Law of Personal Data Protection) and the Privacy Policy of the MINING HUB, for the purposes of (i) identifying and contacting the holder of personal data for the development of a business relationship with the MINING HUB; (ii) sending publicity, advertising, mailings, virtual or physical cards motivated by commemorative dates, including the holder's birthday, digital and printed magazines, or any other advertising materials, customized or not to the holder's profile, related to the products, services and /or events offered by the MINING HUB and/or its business partners; (iii) using in research, studies, projects and programs developed by the MINING HUB;

**Article 78** - The e-mail [mininghub@mininghub.com.br](mailto:mininghub@mininghub.com.br) is established as the program's official communication channel.

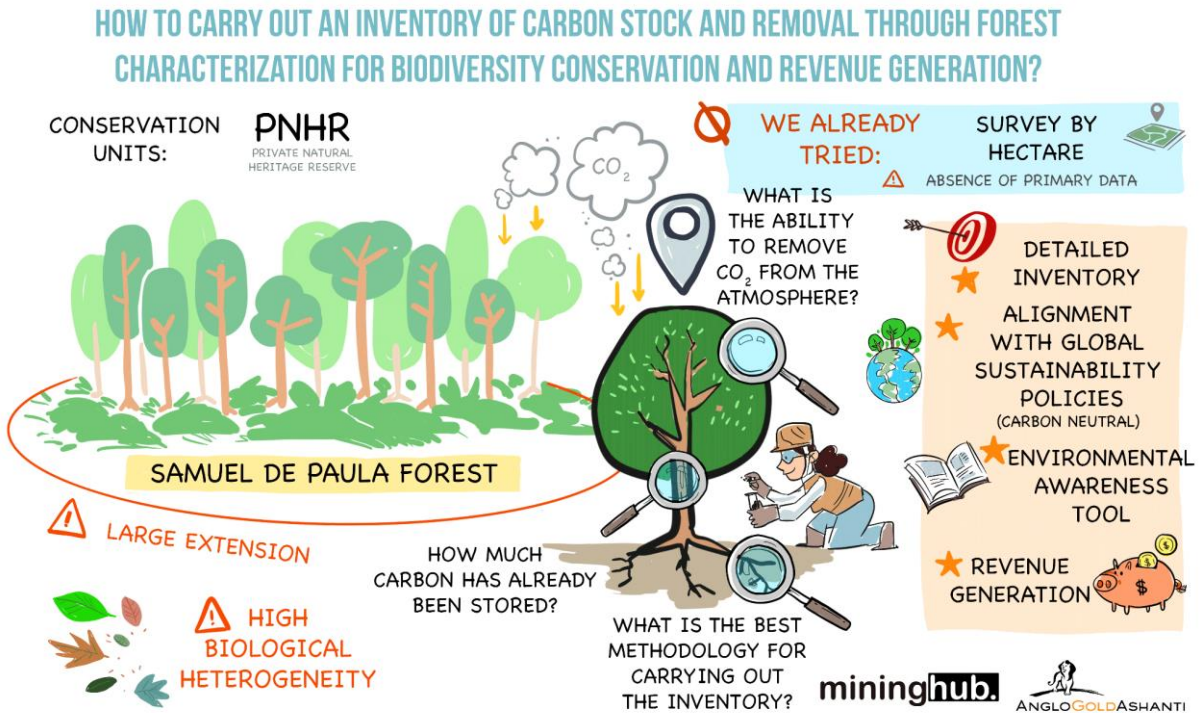


### ANNEX I - SCHEDULE



ANNEX II – CHALLENGES

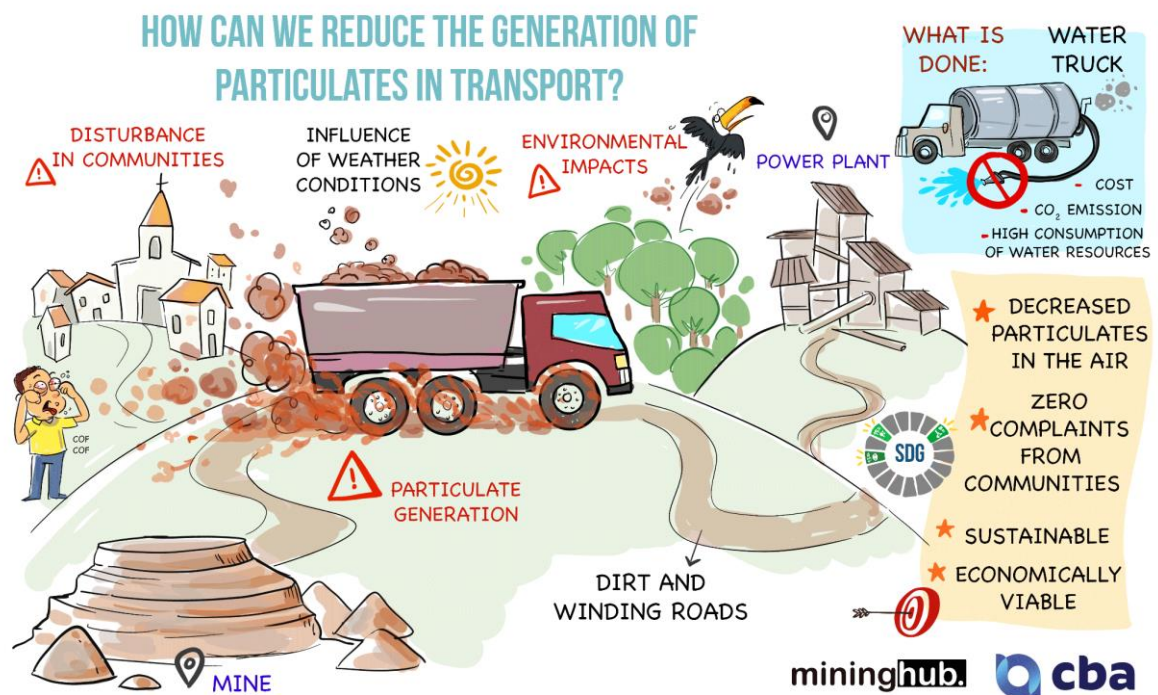
1.1 How to carry out an inventory of carbon stock and removal through forest characterization for biodiversity conservation and revenue generation?



## 2.1 How to transform an obsolete Government Resource Planning and Management (GRP) platform into a more modern and functional system?

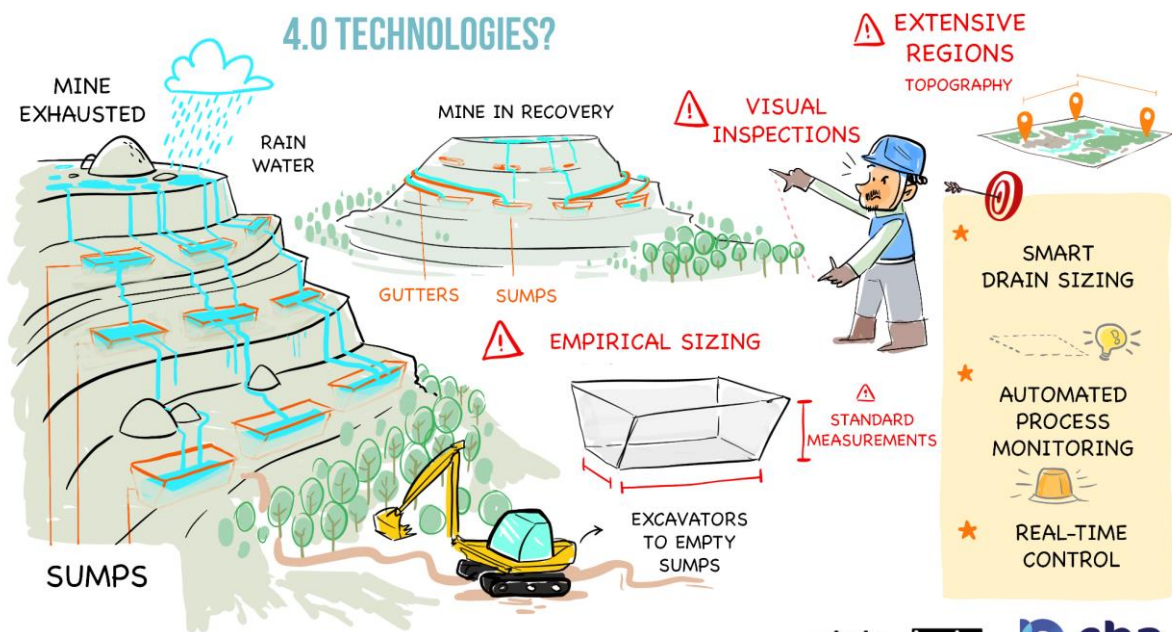


## 3.1 How can we reduce the generation of particulates in transport?



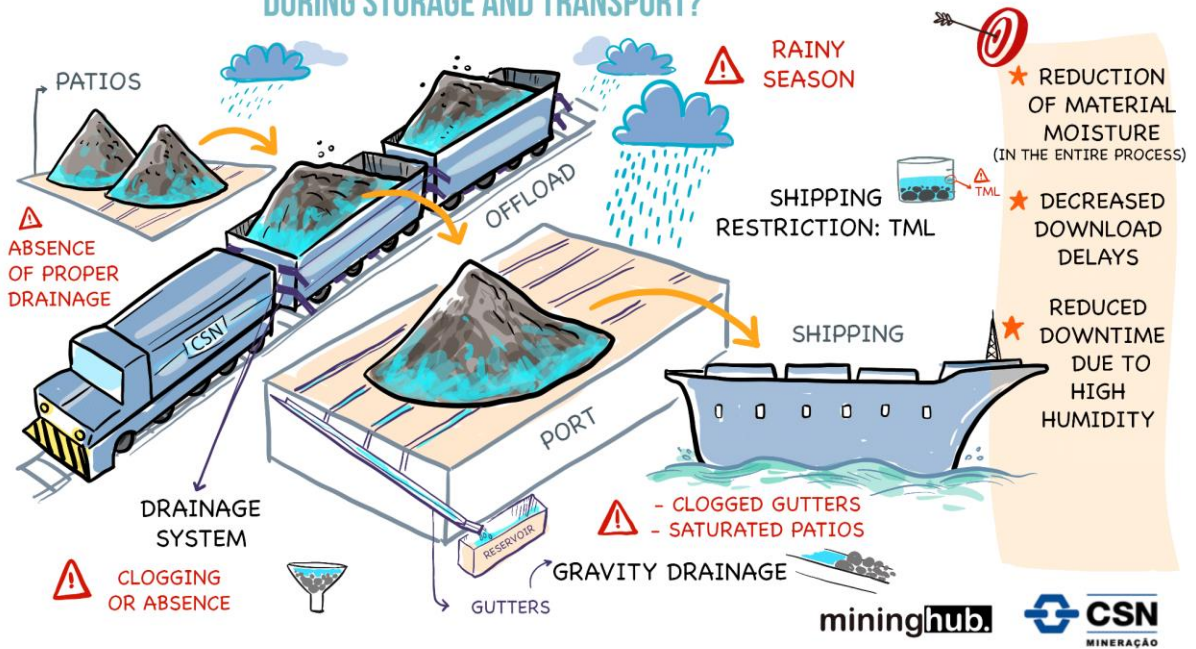
### 3.2 How to perform mine drainage using 4.0 technologies?

#### HOW TO PERFORM MINE DRAINAGE USING 4.0 TECHNOLOGIES?



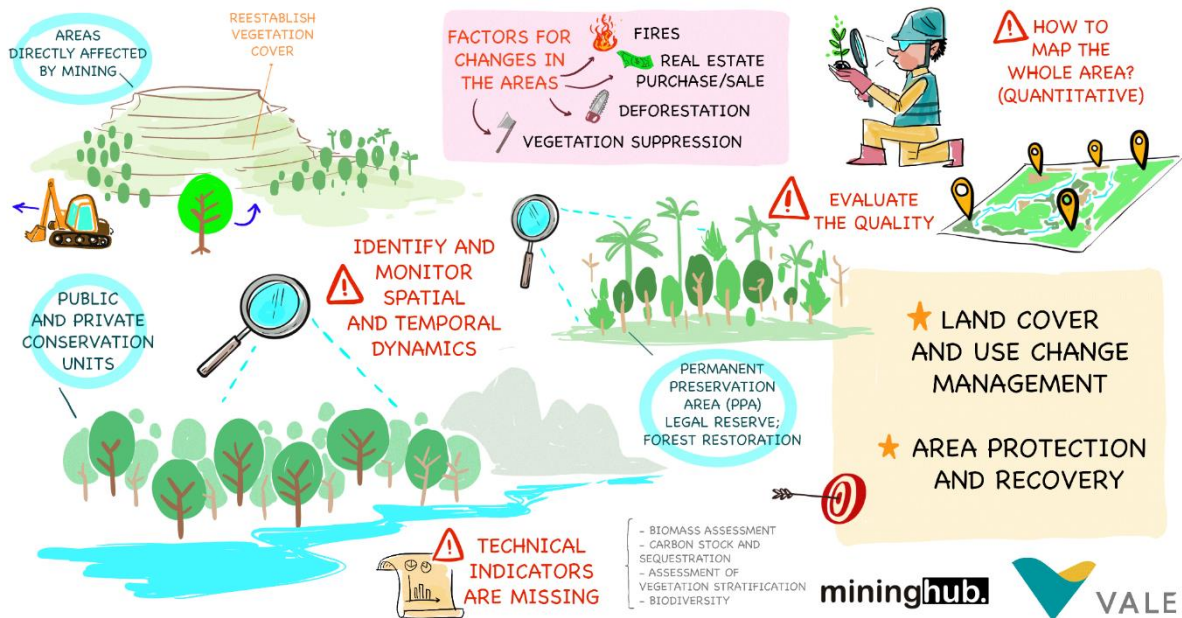
### 3.3 How can we solve the problem of excess moisture in iron ore during storage and transport?

#### HOW CAN WE SOLVE THE PROBLEM OF EXCESS MOISTURE IN IRON ORE DURING STORAGE AND TRANSPORT?



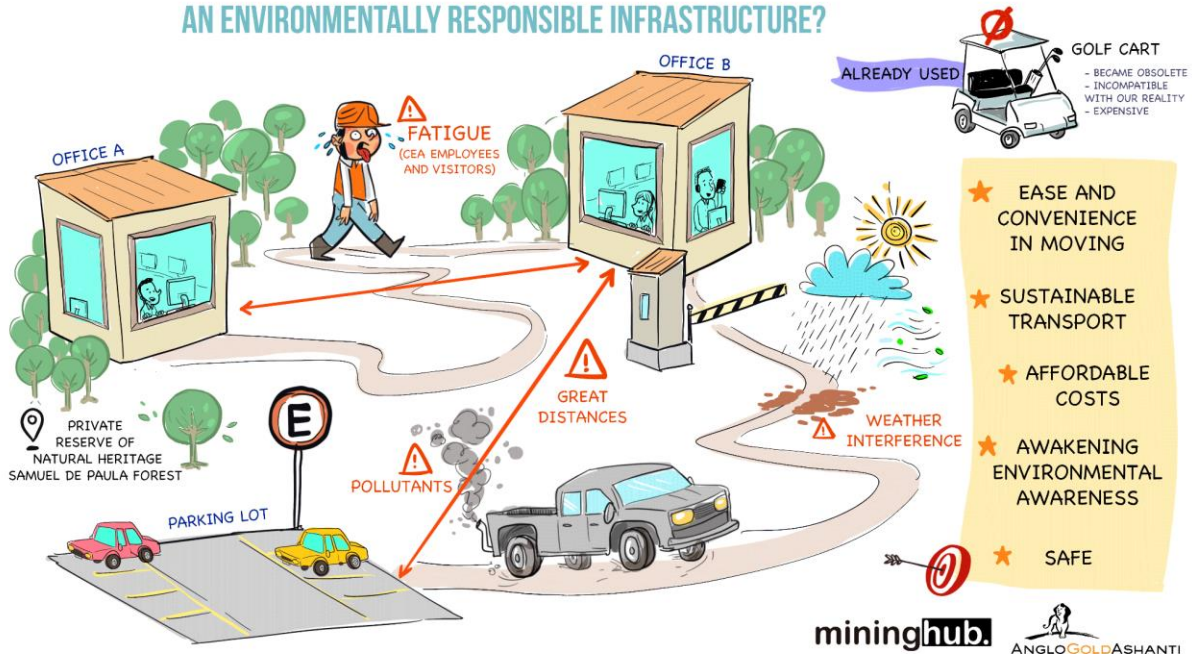
### 3.4 How to evaluate and monitor the dynamics, over time, of changes in vegetation cover and land uses in mining areas in Brazil?

#### HOW TO EVALUATE AND MONITOR THE DYNAMICS, OVER TIME, OF CHANGES IN VEGETATION COVER AND LAND USES IN MINING AREAS IN BRAZIL?



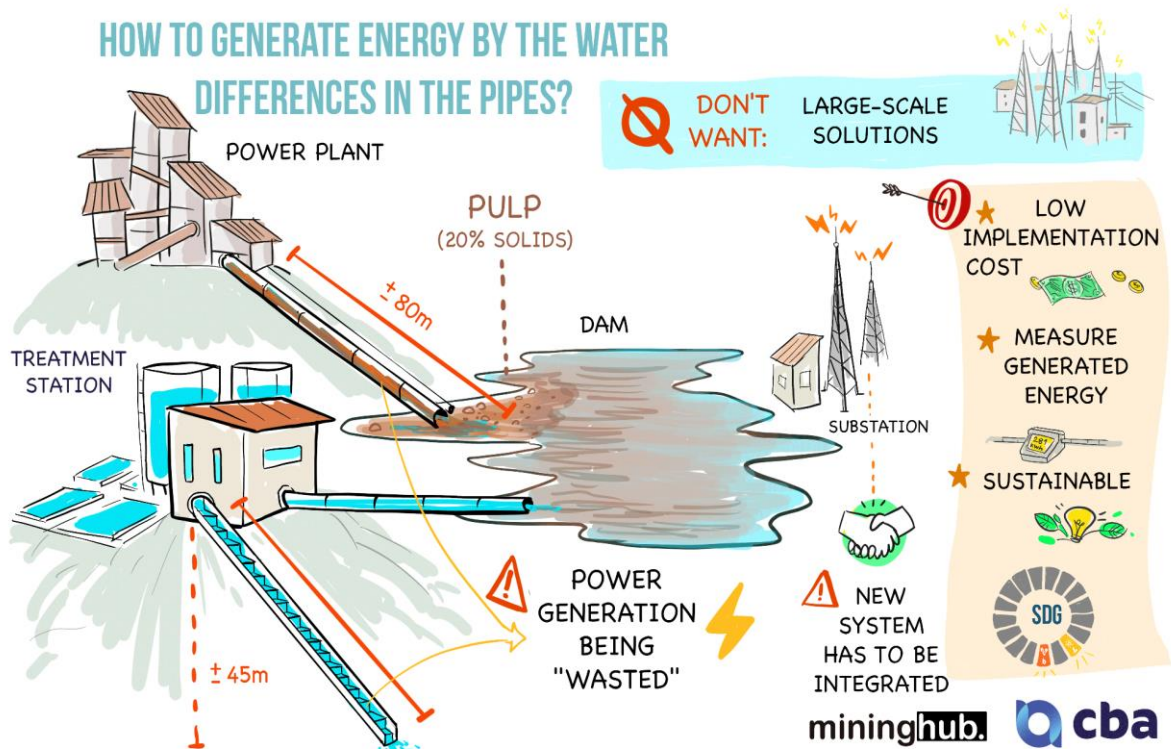
### 4.1 How to promote mobility and accessibility in administrative areas through an environmentally responsible infrastructure?

#### HOW TO PROMOTE MOBILITY AND ACCESSIBILITY IN ADMINISTRATIVE AREAS THROUGH AN ENVIRONMENTALLY RESPONSIBLE INFRASTRUCTURE?



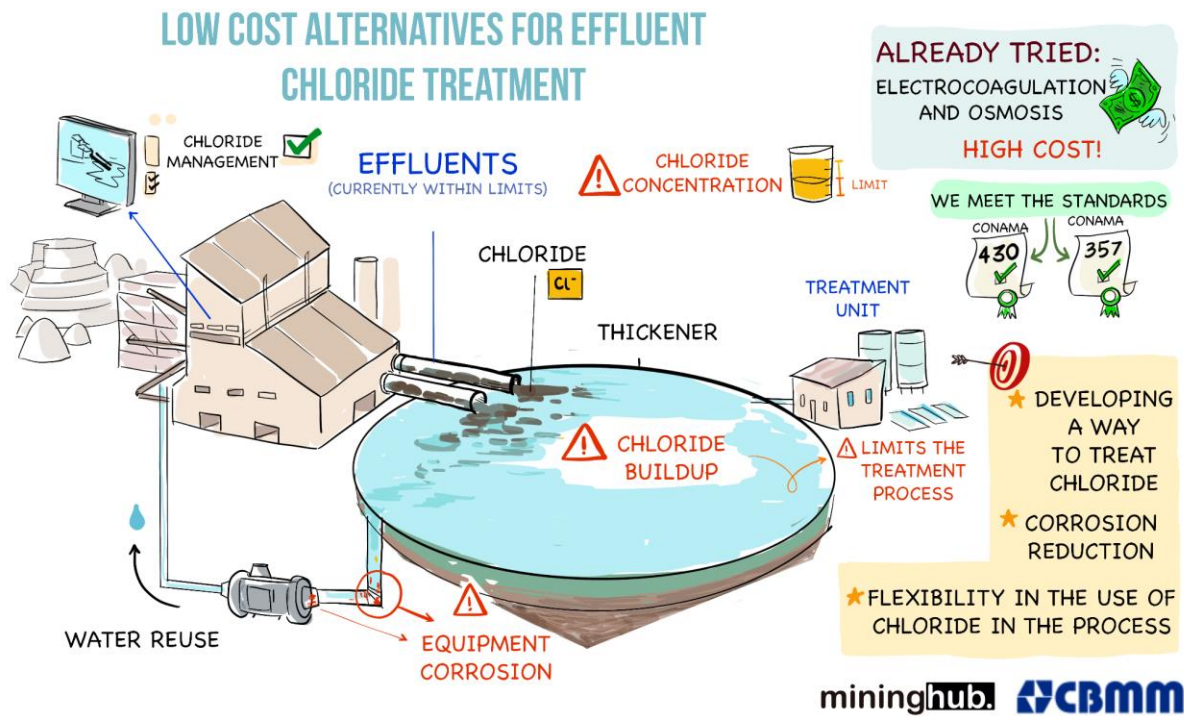
### 4.2 How to generate energy by the water differences in the pipes?

#### HOW TO GENERATE ENERGY BY THE WATER DIFFERENCES IN THE PIPES?

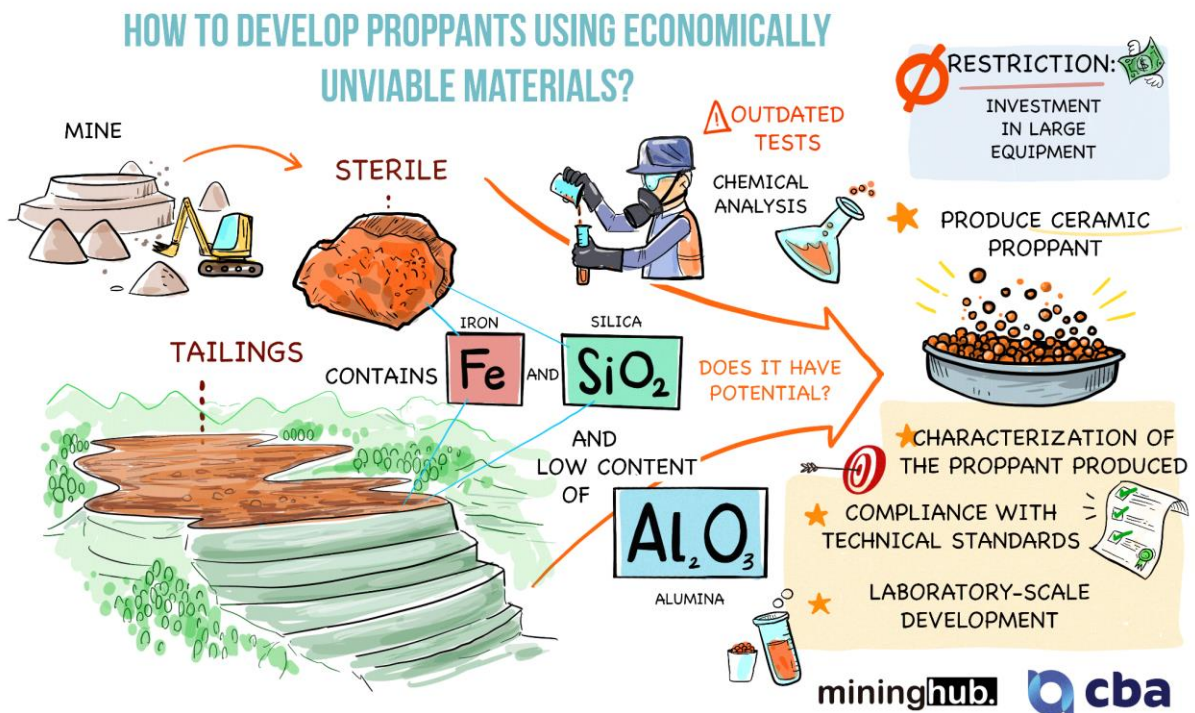




### 5.1 Low cost alternatives for effluent chloride treatment



### 6.1 How to develop proppants using economically unviable materials?



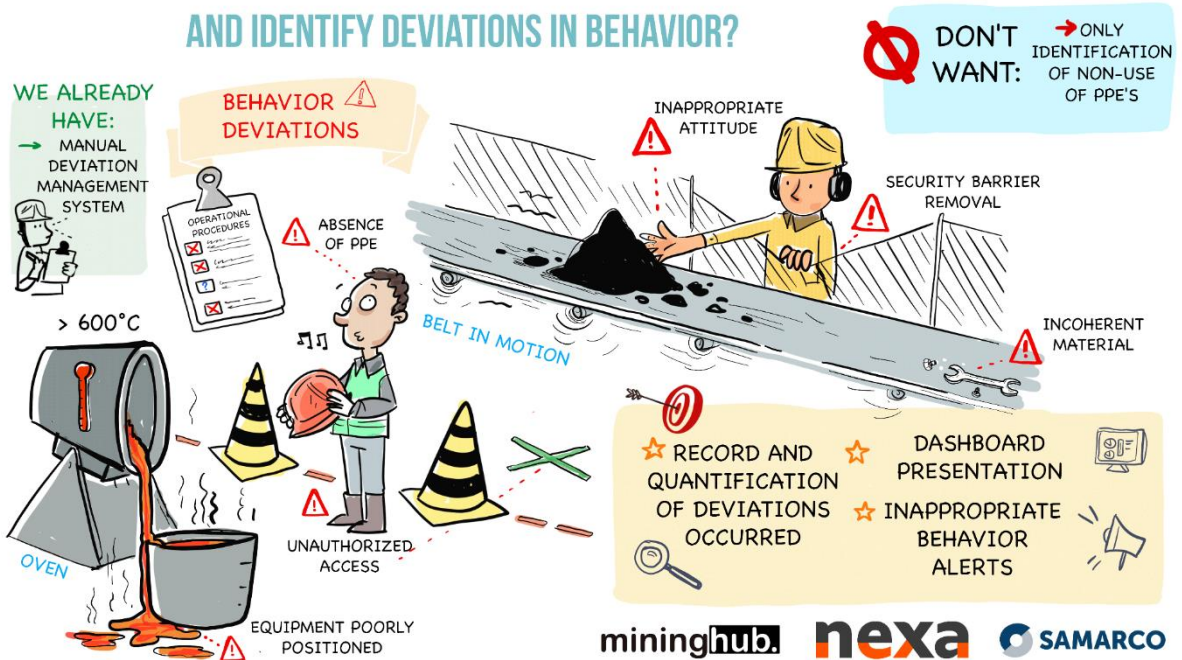
## 7.1 How to develop a communication system for operational employees who do not have e-mail?

### HOW TO DEVELOP A COMMUNICATION SYSTEM FOR OPERATIONAL EMPLOYEES WHO DO NOT HAVE E-MAIL?



## 7.2 How to carry out the monitoring of standardized activities and identify deviations in behavior?

### HOW TO CARRY OUT THE MONITORING OF STANDARDIZED ACTIVITIES AND IDENTIFY DEVIATIONS IN BEHAVIOR?



ANNEX III - M-START CYCLE 8 - CHALLENGE MINING HUB

How to scale up innovative startups solutions in the mining sector?

HOW TO SCALE UP INNOVATIVE STARTUPS SOLUTIONS IN THE MINING SECTOR?

