

# Vale Day 2021

New York Stock Exchange | November 29, 2021

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IVAN FADEL|HEAD OF INVESTOR RELATIONS: Hello everyone. Thank you so much for being here. Welcome to Vale Day 2021. I'm Ivan Fadel, Head of Investor Relations here at Vale. First of all, I'd like to thank you all very much for being here with us today. I think we're still transitioning to these in-person meetings, so it really means a lot to have you all here with us. I'd also like to thank our live audience online for your time and interest in our company today.

So, the idea here is that we have the top management team of Vale to have a slide presentation. We're going to talk about the main deliveries and main milestones for the last 12 months. We're going to also update you on our strategy, how we're looking into the future, how we're positioning ourselves in this decarbonization world, and we're also going to make some announcements, so stay tuned for that.

The presentation should take about 1 hour and 15 minutes, 1 hour and 30 minutes. After that we're going to have a Q&A session. It should also take about 30 minutes to 45 minutes. We're going to take questions from everyone here present. We're also going to be capturing questions from our live audience on the webcast for that. You're going to see an email address on the screen. You can send your question to that email and we're going to read them out loud here.

Without further ado, I would like to invite Mr. Eduardo Bartolomeo, our CEO. I hope you enjoy this event. Eduardo, please, the floor is yours. Thank you.

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: Thank you. Thank you, Ivan. Good morning everyone. It's very nice to be here in your presence. Actually, it's my first presentation in person since 2020. The only negative side is that we cannot do it in Bermudas now 2020 because of the pandemic. Anyhow, I would like to enforce the acknowledgement that Ivan said about being here today. Thanks a lot for making the effort to come here to talk to us and for the audience as well that is listening to our story we be here.

Today I'm going to quickly pass a little bit over what I'm going to try to convey and tell you how we are advancing on our strategy and actions. Of course you do remember our five strategic pillars. They are things that were embedded after Brumadinho, the first two ones, the safety and the operational excellence, and what we call the New Pact with Society. They

are drivers to an ambition that Vale has to be a safer, a more reliable, a more human-driven, talent-driven organization, a sustainable miner and obviously a creator in sharing value with shareholders or with the society as well.

Those ambitions in the end; what is the main line around what we are talking here today? We believe that the homework that Vale has been undergoing since Brumadinho, it's hard to say it's a continuous process, but obviously it's almost completed. But on the other hand, you're going to see there is something in the very short term that we understand that it's the biggest value on our story, on an equity story, is that obviously the world has a biggest challenge as everybody knows, climate change. It's been recently exposed by COP 26. We want to be as a miner as a specific company not only necessary but wanted to the world because we're essential to that.

Specifically, when you look at Vale assets, you're going to see that we are extremely well exposed to both iron ore and base metals. The baseline is this. We're going to talk a little bit around the homework. The first two pillars are a lot about what we're doing inside Vale to transform Vale. The last three pillars are around how we're getting from this homework done to capture the opportunities that our assets have in this new world.

## **Reparation, People & Safety**

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: This first part I'm going to do together with Carlos Medeiros, our Executive Vice President for Operational Excellence. Of course, and this is obvious for us, we will never forget Brumadinho. Brumadinho as you know has been the driving force in everything that we are undergoing inside Vale. All those behaviors that we need to change, all the things that we need to do are driven from a process of learning that was derived from this. It's a lot of listening because you have to engage with communities that are affected.

In this case, it's a tapestry. It's a very nice piece of work done by the affected people, a widow of one of the victims, and it has been exposed in Inhotim. Inhotim is an open-air museum in Brazil, very, very nice. It's true, a process of, as I mentioned before, of learning and acting. But fundamentally engaging to respond to the needs of the community.

As you also know, on February 20, we struck a deal, an agreement with the local part in Minas Gerais with the affected people with the prosecutors of 37.7 billion reais and of course it brought legal certainty, it brought

governance, and it brought ability to execute.

But to show you some concrete actions--because as I mentioned in the beginning, I want to show you concrete actions that we are taking in that direction. I would like to make a small video of what is being done in Brumadinho.

[Video Start]

FEMALE VOICE: In February 2021, Vale, public authorities, and justice institutions established an agreement for integral reparation in Brumadinho. This agreement is under execution, underscoring our commitment to socioeconomic and environmental reparations. The following is a highlight of our latest developments. We continue to be dedicated to expediting indemnity agreements. Almost 12,000 people are already covered by individual agreements. To secure water, we've completed a new 11-kilometer pipeline and a water collection system at the Paraopeba River, which continues under around-the-clock surveillance.

In the urban structure, we've delivered social impact facilities, such as daycare centers and family health units. We've expanded access to healthcare and prepared professionals with training. In addition, over 5,500 pieces of equipment were donated, and 143 basic health units were assisted.

In the social and economic aspect, we have supported projects to foster and diversify the local economy. Together with the Yara Tupynambá Institute, we've trained members of the local communities with professional courses in civil construction and gardening. The students were able to apply the knowledge and skills in more than 230 homes and gardens. We remain committed to repairing Brumadinho with transparency and speed. Everything we have learned since the B1 dam breach has helped us advance toward a better Vale.

[Video End]

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: Well, as you can see, a lot of things have been done. 55% of the total payments that we're supposed to do--and Gustavo will come later on--the disbursement profile of that has been done, as I mentioned with legal certainty with execution and more importantly, with governance. Because when you see the projects that we list here, they are things that you have to execute. You have to listen to society. That, by the way, for us was maybe the biggest wake-up call to move, to transform our culture, the active way of listening and understanding what are areas of improvement.

Of course, I won't go for the right side of the slide because that was

mentioned in the video, but I would like to jump to the important things that are undergoing inside Vale. It's that we need to transform our culture. But of course, that culture is transformed by the people there inside Vale, these people putting people at the center as we mentioned before in Brumadinho, putting people in the center as we do inside the company is critical. We chose a path I'm going to share in a minute, a whole lot of the key behaviors that we want to change. We actively engaged our managers on that; 80% of our managers are activated on that. Of course, we have 99% critical roles of success mapped, so human resource of people is a key element of our debt.

But interestingly, because of this--we cited in one of those, our Vale Day presentations--we need to double our gender diversity. We had 13%. Mining normally is a man's world and of course, as everybody knows, a diverse inclusive company performs much better than a non-diverse inclusive company.

This is another very important point I wanted to make here. This is concrete. This is not something we are talking about. Since 2019 we have increased our workforce by 39%, female workforce. We added 4,500 women in our workforce, and we have an 80% increase in senior leadership roles. Actually, Malu was supposed to be here. I even doubled my VPs. Now I have my Human Resource and my Sustainability as leadership in females.

But there is a second diversity issue more focused in Brazil that I think is being brought to our attention and has a huge impact as well in diversity, is ethnicity. We just made a census in Brazil specifically to be self-declaratory of course. You ask people what to call or they are. We are 65% non-white in Brazil. What does it mean? That that implies here when we have this goal that I'm going to mention next, we only have 29% of our leadership roles from supervisors as blacks. So, there's an imbalance that's not acceptable. It demonstrates a structural racism problem, so we have this goal as well to increase our leadership roles to 40% by 2026. It is not enough to be pro-diversity, so last week or the week before we just launched a manifest of anti-racism because it's very important.

We are in a country as the U.S. that has the same issues, and we have to target very clearly and very openly. As I mentioned before, it will bring to us a much better, a much more inclusive, much better performance company to achieve those ambitions that I mentioned before.

But culture is something hard to manage. Everybody asks, "How are you transforming culture? How do you manage your debt?" We have a tool. It's called *Echoes Pulse*. It's more or less standard in the industry. We took surveys of course and it was identified. I, myself, answered the survey.

You see the five behaviors that we have that we believe will change the company.

There is obsession with safety, active listening and engaging as I mentioned already, ownership, empowerment--that's very important people feel empowered to do what they need to do--, and open and transparent dialogue. When you look at the graphs, I'm not going to bother you with the graphs, but you see that we have a huge perception in Vale today with obsession with safety because of obvious reasons. People believe that we are actually true, but when you look at the other behaviors, actually the lowest here is the empowerment. But the active engagement of society is the lowest or should be the one that we should try more. What I'm trying to say here is that we still have gaps. That's why I said the homework is being done, but of course as a continuous homework. It never ends.

Anyhow, our leadership is truly committed to make it happen because we feel if we don't change the culture, we'll never get to the results we want, even if we have the better assets in the world.

Just to conclude, and as a good engineer, although maybe too long ago, we believe in a very simple equation that I will try to share with you and then Carlos is going to help me with that. If you have the right people with the right behavior, if you have the right process, you will have the right results. Results are not defined as just financial results. Of course, in this room here financial results make a little bit more logic, but financial results are a consequence. When we talk about results, we're talking about safety; we're talking about predictability; we talk about even how even society perceives you.

We believe that our management model was something that was lacking inside Vale, that some of you might have known or have heard about, as the VPS is a Vale Process System. It's all-around ABS like Cohas or Toyota. It's a structure. It's an architecture. But it's VPS. Its culture put in action. We will show you how to think together to improve our performance. We invite now Carlos to share his views because he's the owner of the ball in this case. Then I'll come back to talk about the social part.

CARLOS MEDEIROS|EXECUTIVE VICE PRESIDENT OF SAFETY AND OPERATIONAL EXCELLENCE:  
Thank you, Eduardo. Good morning to you all. I'm here to provide an update on our operational excellence and safety performance. Hopefully I'll try to make clear how it ties up to the cultural transformation that we are going through.

We have been on this journey for two and a half years, so u is implementing

its integrated management system or as we call it, VPS. This is a system based on operational excellence or lean manufacturing, like Eduardo described. A system that defines how we do things. We truly believe that our people with the right processes in the right culture will be capable to deliver consistent and positive results. The examples we brought here today corroborate our thinking.

As you look in this chart, as our VPS maturity index goes up, the safety as well as the maintenance performance improves. Consequently, the overall production performance also improves. We picked here three examples, one of our mining complexes, one of our railways, and one of our ports. They describe pretty well how operational discipline can leverage performance. This is very much what has been going on at Vale. We truly believe that the VPS or our management system is a reflection of our culture put into practice.

Specifically talking about our safety performance, you can see on your left-hand side this graph #1 shows the N2 evolution. N2 are events that are precursors to significant injuries and fatalities. Our objective is to zero the N2s by 2025. On the right-hand side you can see the total recordable injury frequency rate or TRIFR. The top graph shows the TRIFR progress through time, while the bottom one shows the ICM 2020 benchmark. Here the N2 is a leading indicator, while the TRIFR is a lagging indicator, and we are making progress on both. We are also making good progress on occupational exposure. Since we are reducing our workforce exposure to agents such as noise, heat, dust, and chemical hazardous materials.

Vale also has a very thorough methodology for operational risk identification. This is called HIRA, hazard identification and risk assessment. The first HIRA cycle encompassing all Vale sites was concluded during 2021. The second cycle will start next year. During this process, risks are mapped, controls and mitigation plans are identified through a multi-diagram, and then registered.

On the right-hand side, you can see tangible examples of risks that have been either eliminated or minimized. I will highlight one in Canada at Port Colborne, where the chlorine gas was replaced by bleach, therefore, eliminating the risk entirely. Another one at Mozambique, the ammonium nitrate inventory was significantly reduced and also reorganized. Then the risk was minimized.

When we talk about dams, dams have always been a major point of concern. So far, Vale has de-characterized seven dams. One of them was announced today in the press, a dike at the Pontal dam that was de-characterized.

There are 23 more to go. De-characterizing an upstream dam is a very complex and slow process. This is why we had to review our de-characterization schedule and now it shows completion by 2035.

It's important to reiterate that the intrinsic risks associated with an upstream dam will be significantly reduced before the de-characterization is completed and therefore, minimizing the risk to our neighboring communities and to the environment. You will now watch a video showing our de-characterization program.

[Video Start]

FEMALE VOICE: Vale reaffirms its commitment to society and continues to make progress with the Upstream Dam Elimination Program, operating within the strictest monitoring and international management practices. Overall, 30 upstream structures, including dams, dikes, and drained stacks will be de-characterized. So far, seven structures have been eliminated since 2019.

In 2021, we concluded the de-characterization works of the Fernandinho Dam, at the Vargem Grande Complex. We also completed the de-characterization of dike 5 in the Pontal dam and we will conclude by the end of this year the reinforcement of dike 4 for subsequent elimination. We have also finalized the Downstream Containment Structures that reinforce the safety of all of Vale's dams at critical emergency level.

In 2021, we completed the containment structure that supports the Forquilha I, II, III, IV and Grupo dams at the Fábrica mine. We have begun the tailings removal from the Sul Superior and B3/B4 dams, an essential step towards their elimination. To increase safety throughout these works and reduce human exposure to risks, we've utilized unmanned remote-controlled equipment. We've enhanced our dam safety management up to the best international standards with revised governance and multiple layers of defense in risk management. These actions support our commitment to people, communities and the environment. To learn more, visit [vale.com/esg](https://vale.com/esg).

[Video End]

CARLOS MEDEIROS|EXECUTIVE VICE PRESIDENT OF SAFETY AND OPERATIONAL EXCELLENCE: So, when we talk about emergency levels, Vale looks at these structures with a precautionary and a risk-informed approach. We have a very strong governance in place that allows us to treat any discrepancies in a conservative and qualified way. Currently, there are 31 structures at different emergency levels. As you can see, by 2025 there is a significant improvement, given all the work that is going on.



Now, in order to ensure that everybody is understanding, is on the same page, I'm going to walk you through the differences between emergency levels 1, 2 and 3. At emergency level 1, it means that we are talking about anomalies that require information, attention, or simply monitoring. At emergency level 2, we refer to anomalies that require treatment, but these treatments have not been concluded yet. At emergency level 3, there is a higher liquefaction risk. However, for all these structures, they have these back-up dams as you saw in the video that allow us to carry on with the de-characterization work. The main point here is that by 2025 we will not have any structure at emergency level 3, which means the most critical safety condition.

As you are well aware, the ICMM jointly with the PRI and UNEP have jointly launched the global industry standard for tailing management or GISTM, as we refer to it. There is an industry commitment that by August 2023, all the structures with extreme or very high potential consequences will be compliant to these standards, and the remaining ones by August 2025. Since Vale has been working on its tailing's management system for a while, we have recently run a self-assessment that indicated that we are 60% compliant with the GISTM. In February next year, we will carry out an external assessment that will help us identify the gaps that we will still have.

The plan is that by the end of next year we will be at least 90% compliant to the GISTM, so this makes us feel confident that Vale will be able to comply with the industry's deadline.

As you could notice through all these slides, there have been important progress on operational excellence through our VPS, our safety performance is improving, we have a very strong methodology for identifying the operational risks, and all the de-characterization program is moving forward according to plan. Therefore, we can say that Vale is gradually becoming a safer and more reliable company. Thank you. I will hand it back over to Eduardo.

## **New Pact with Society**

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: Thank you, Carlos. Let's move to the second chapter of our soft issues. I think they are not that soft myself. Luciano and I will do that together, the new pact with society. That I mentioned before was done when I arrived. What does that mean? We want to impact society beyond paying taxes, beyond social projects, and we have been doing that. I will quickly run over those achievements because Luciano

is going to come back on the environmental side.

We were one of the first miners that came with a very strict and strong--we changed our 2030 agenda on Scope 1 and 2. We gave facts and concrete actions around that. We have a high amount of investments that are done positively impacting our business as well because we see it's in the storyline how we see climate change. We see it as an opportunity, not a threat. But in the end, we are moving towards more reporting, more transparency. We just launched DFCD and ISO14001 certification.

On the social side, that's where we want to explore our time a little bit more today because we have some announcements to do on that. We have already 300 community plans under execution. This year we launched a very important--we standardized our human rights due diligence program and we, as mentioned already, increased a lot our female contribution. I'm going to come back to the social ambition. I think that's very important if we want to be desired, not needed, by society.

Then governance, you already know that in April 2021 from the finishing of our shareholder's agreement, we turned into a true corporation with an independent board--with the majority of our Board independent. Our chairman is also elected by a general assembly as an independent member. We had the Nominating Committee, the Chief Compliance Officer, the Audit Committee. A lot of changes were done inside the governance. Finally, our ESG gaps. The math, the 64, 51... Anyhow, we closed a lot of the gaps that we mapped. Still missing 12, one I think is going to be ended this year and Gustavo is going to mention that. By the way, we were one of the first ones to link all these elements of ESG to compensation, first miner to do that. We did that I think in Vale Day 2019.

But we want to talk about social because I think on the environmental, social, and governance, there is still a gap to be covered. By the way, Malu is our Vice President for Sustainability. She was supposed to be here, but she was unable to come. Anyhow, let me just recap because the social agenda didn't start today with Vale, but let's just recap what we have been doing so far and I will explain a little bit later what our ambition is. Can you show the video please?

[Video Start]

FEMALE VOICE: In 2021, Vale has strengthened its new pact with society. Together we have intensified our social agenda to contribute to the development of resilient communities committed to sustainable mining. In a year still marked by the pandemic, Vale's actions to tackle COVID-19 continue. We have

made donations in the countries where we operate. In attention to the increasing number of people in a situation of severe food insecurity due to the pandemic, Vale has promoted a campaign to tackle hunger through partnerships. By the end of the year, we will have delivered one million food parcels to support Brazilian families.

Contributing to the construction of stories of social transformation, Vale Foundation has developed projects such as quality illiteracy programs for over 70,000 children in Maranhão and the strengthening of public basic healthcare benefiting more than 1.5 million inhabitants in areas where we operate.

As part of our effort to value our culture, we'll conclude 2021 with over 150 million reais invested in art and cultural projects, such as the restoration of the National Museum of Brazil after being destroyed by fire. In order to strengthen our social agenda, we set out today our ambition "To be a partner company in the development of resilient communities engaged in relevant issues to humanity and committed to sustainable mining." Vale believes that together we can transform lives and improve the future.

[Video End]

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: As you can see in the video, I think there's one thing that we are very proud of, is the food support that we gave in Brazil, one million food baskets. Everybody knows that the pandemic brought extreme poverty to a new level. Brazil was really impacted by that. I was here last week. As well, the U.S. has done that.

Another issue that I forgot to mention that we are very proud of, we have 80% of our working force already vaccinated, double vaccinated. So that's extremely important. We say vaccination, yes, in Brazil. Although we have a lot of problems we have, this is the problem that we don't have, so that's a good thing. We are doing very well, although a little bit delayed. We went through the pandemic and we're in good shape of course always with guard up because of the obvious reasons that we are seeing today.

What you saw in the video, how do we define our social ambition? First of all, we want to be this partner company in the development of resilient communities. I just want to give a step back here, how we did that. I mentioned Malu, Malu was hired. We didn't come up with something we said it's nice, looks nice, and that's what people think is nice. No, we went and talked to everyone, talked to NGOs, talked to ourselves, talked to our leaders, talked to institutions, to shareholders as well. And we understood that those are fundamental issues that we have to tackle.

First of all, we have to help the resiliency of the communities. What does that mean? They have to be autonomous. We don't choose to go to a place. Mining is a given. Mining is not an option. You have to create value there when you're there and when you leave there, because you're going to leave one day.

Second, because of the size of our company, because of the spend that we have--we operate in over 30 countries--we have to be engaged with relevant issues with humanity. I'm going to come to them in a minute. And of course, we have to be committed to sustainable mining.

The first thing: what are resilient communities? It's income generation, its health, and it's education. You don't take people out of poverty if you don't do those three things.

Second, global causes. Human rights. We chose to start--there are several others that I mentioned in human rights, but of course, indigenous relationships are important to us not only because of Brazil, but Canada. We work on the arctic with the Inuits, so the relationship with indigenous people is key and we can help that a lot. Of course, as a global cause, Amazon Forest, we are there present, mining there for more than forty years, by being a reference, and I think we can extend that.

And being a sustainable miner. We have to be a good neighbor. We have to do no harm. We have to be sure that we are affecting positively the communities that we are in and of course create social value as I mentioned before.

But as we did in 2019 when we came with the goals for the environmental side, we came with those three goals, and we would like to share with you because they are bold and they will take the commitment of our leadership. As a shareholder, you should be acquainted with it.

First of all, we want to lift 500,000 people out of extreme poverty. Just to have an understanding, in our areas of influence, we have 1.9 million people. The reference for extreme poverty is 1.9-something cents or dollar per day per capita in a family unit. It's not acceptable to have that. We're going to have a plan to do until 2030. But of course, and I mentioned in the beginning, what to reinforce that. It's not Vale that's going to do. It's Vale with the communities, Vale with societies, Vale with other companies. It's Vale using its power with suppliers. It's Vale bringing to the local community's growth.

Indigenous people. We want to develop the right plans or development plans

with them. I won't even try to say what's UNDRIP. It's United Nations Guidelines for Indigenous people. There we have 13 communities, 13 indigenous communities around our operations and we are developing a plan with them to demonstrate their rights and to ask them what they really need and want. In Canada it's obviously different than from Brazil, but we have to create and to reinforce their wellbeing.

Lastly is a goal that is an end and beginning goal. On the social side when we are mapped by Sustainalytics, MSCI and Dow Jones, we want to be in the top three when you look at the social elements of that.

You might even say this is an auto reflection goal. No, it's a mirror that if we are doing the right things, if we are doing the requirements that are needed to be there, we will be achieving our social goals, and we'll be accredited. Because it's very important not to say that I'm beautiful; somebody has to say to you that you're doing the right thing. So, I think that's the main issue around those three goals.

Now I want to make a transition, as I mentioned to you in the beginning. This looks a lot about soft issues. Somebody asked me yesterday: do you think ESG is important? It's critical. First of all, we don't do greenwashing. What we come here and talk to you about, we do it. We put money where we are. We execute and we give transparency. But the things there when we take 10 in environment, 10 in social, 10 in governance, we allow us to be a company that will deliver the results. Now I want to make the transition to the future. Now I ask my new VP that is not from you, as the ex-CFO, is Luciano Siani. He will show you how we're going to move to this company. A lot of opportunities that people even in iron ore and not gas--because when you talk about transition, the new world is copper, cobalt, nickel, lithium. Iron ore is there and I'm spoiling your presentation.

LUCIANO SIANI PIRES|EXECUTIVE VICE PRESIDENT OF STRATEGY AND BUSINESS TRANSFORMATION: These social goals are a nice last brick in the ESG construct of Vale. I will remind you of the first announcements of targets that we made two years ago in this same room of the environmental goals as a starting point.

You see those six goals on the left-hand side. You may say scope 1 and 2 emissions, net zero reduce scope 3. Now this is the standard in the industry. Everyone talks about it. On the right-hand side of the goals we have some that play to our strengths, renewable electricity, forest, for example. You have a nice progress in the case of forest protection. But 120,000 actors of forest--like we signed agreements in order to protect beyond the

million actors that we already do.

Here it's all about execution. Focusing on scopes 1 and 2, this is just a reminder of what the profile of emissions in the donut, in the middle shows you, which is no different from other mining companies. Most of our emissions come from the furnaces that we have, the pelletizing and metallurgy furnaces. Then you see the rest of the profile. We're very focused on this.

The question here, as this has become a baseline for the industry everyone has to achieve, is how credible it is that we are going to achieve our targets in 2030 and then in 2050. The message for you is we have an abatement curve for scopes 1 and 2. We have a technology roadmap. We have an internal price for carbon, and we have capital allocated to that. We have the proper governance, a very senior forum with the executive vice presidents managing the process.

As a result of that, there's a lot of stuff already going. The next video will show you examples of that.

[Video Start]

FEMALE VOICE: Vale will invest up to 6 billion dollars to cut 33% of our scope 1 and 2 emissions by 2030. From mine to port, let's take a look at some of our actions. Starting by our energy matrix, we're investing in renewable energy initiatives, such as the Sol de Cerrado Solar Energy Project and the Folha Larga Sul Wind Power Project. Our renewable energy projects will power the operations in our minds. In iron ore, we'll expand the use of conveyor belts. We're also increasing the adoption of self-driving vehicles with improved energy efficiency.

In our Canadian operations, we'll have more than 40 electric trucks by the end of 2021. Pelletizing and metallurgy are a massive challenge, accounting for 57% of Vale's emissions. Pilot projects are already underway to replace coal and other fossil fuels in the furnaces with bio-oils and biocarbon.

Renewable energy will also be present on our railroads. On the Vitória-Minas Railway, we're piloting a 100% battery-powered switchyard locomotive. At our ports, we're investing in efficiency with cost reduction. One of the country's largest battery energy storage systems will operate at the Ilha Guaíba Port Terminal. From mine to port, we have a clear, ongoing plan to support our transition to a low-carbon economy.

[Video End]

LUCIANO SIANI PIRES|EXECUTIVE VICE PRESIDENT OF STRATEGY AND BUSINESS TRANSFORMATION: Scope 1 and 2 are all about execution and being credible in delivering the targets. Scope 3 is a completely different game. Scope 3 is about opportunity. You're all probably looking at the mining companies and thinking: what are the mining companies which are most exposed to the theme of de-carbonization? You think these are the mining companies that have cobalt, that have nickel, that have lithium, that have copper, and you look at the Vale portfolio and may think Vale has 85% of revenues and profits generated by iron ore.

But please, do not miss the fact that electrification isn't the only theme of the low-carbon economy. The other theme is reducing emissions in the manufacturing of things and still making almost 10% of worldwide CO2 emissions. It is an industry that will undergo a dramatic revolution in order for humanity to succeed in fighting climate change.

We're going to show you that we are in the best position to create new markets, new opportunities, and to create value by playing into the decarbonization of the steel industry.

Let me show you some things here. Left-hand side talks about iron ore. Right-hand side I'll make comments about nickel and copper. Vale has the highest Fe content on average of any portfolio of iron ore products compared to our peers. This you know. What you may not be well familiar with is that the more the world transitions into, for example, hydrogen-based steel-making--and it will need to go towards that direction in stages maybe first with direct reduction of natural gas, that kind of stuff--the more high-quality iron ore will be important, and it will be valued. This is going to be a key differentiation in the future.

Seeing the bottom how the market share that we have in the segments that will dominate this decarbonization trend, how dominant we are in comparison with our peers. You see the green portion of Vale market share leaders in the high-quality segment. We'll talk more about that.

On the right-hand side, now talking about the traditional metals that we need to offer to help the world electrify, this is a curve of CO2 emissions of nickel class 1. What's the point here? Many people are saying the Chinese will crack the code and will produce class 1 from nickel pig iron, for example. They are exploring some routes towards that direction, but most of those routes are also carbon intensive, so it defeats the purpose. You want to electrify the world and produce class 1 nickel through routes that emit CO2.

The Vale class 1 nickel is by far the lowest carbon intensity in the world; for example, thanks to high metallurgic processes in Long Harbour. The footprint here, for those who are going to source low-carbon nickel, we're going to be winners. In both of our key businesses, we have great opportunities tied to the decarbonization of the economy. I will invite Marcello Spinelli now to start introducing you to how we're going to play in this future world.

## **Maximize Flight to Quality in Iron Ore**

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: Thank you, Luciano. It's a pleasure to be here again, an in-person meeting. I'm really happy to be here. I'll drive through one of Vale's strategic pillars called Maximize flight to quality in iron ore. My presentation has three chapters. The first one is the new way to operate. I'll bring some updates about our resumption plan, the way we are reducing the necessity of dams, and also improving the quality. Second chapter, as Luciano said, is: why Vale is a supplier of choice for this new green world in the steel mill industry. Finally, the third chapter is about all these together and how we can enhance our competitiveness. Let's move forward to a new way to operate.

We've been sharing our actions to reduce the use of dams. Today we have an exposure of 70% and you know that some years ago we started a blending strategy. We bring Carajás fines from Northern Brazil and the low-grade ore from the South of Brazil. We blend in China. We form the BRBF. BRBF today is half of our sales. It's a very successful strategy. As we do this, we don't need to use water to concentrate in the South. That's the main, it was the first strategy, so we can produce it in a dry processing method.

But we are saying that we are moving to 85% in this journey, so how are we going to do this? Five actions. First one: improve the capacity in the North. We need to go to 240 million tons of capacity. We have the roadmap. In the north specifically we have one plant that uses water. That's Plant One in North range and we need to convert to a dry process. We're going to do this in a few months.

Second action: the main volumes that are coming, the brown and green fields that are coming in the South are coming in the dry processing method. As an example, we have Capanema.

Third action: filtration. You're going to see some more updates about this. We are extracting the water after using the water to concentrate. We are



extracting the water to dry stack the tailings, and we don't need also the dams.

Fourth action: dry concentration. It's a new technology. It's going really well. We have it under construction. I'll give some more colors about that.

Finally, we have a new thing here. It's co-products. Again, it's a very nice initiative that we also have. You're going to hear about this a lot in the few months and we'll give more details.

Moving to the filtration, I want to check the box here. We've been promising this for some months now. We are the leaders. I want to show a video now that you can see the progress.

[Video Start]

FEMALE VOICE: In March 2021, Vale took a meaningful step towards a safer and more sustainable mining operation, the beginning of the activities of the tailings filtration planned at the Vargem Grande complex in Minas Gerais, two other plants at the Itabira complex and one other in Brucutu will start up operations in the following months.

The filtering of tailings reduces the need of dam use and consists in using vacuum filters in order to reduce the presence of water in iron ore tailings. The resulting material has much less moisture. It can be transported, stacked, and distributed in layers, allowing for vegetation rehabilitation. The plants will support beneficiation plans, reducing the need of tailings disposal and dams. There is also an improvement on portfolio quality with a production of high-iron content products, which contributes to the optimization of Vale's margins. We invest in innovation to create a safer mining, more sustainable, and more competitive.

[Video End]

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: That's great. Now dry concentration. As I mentioned, we have a plant that is under construction, 1.5 million tons, in Vargem Grande. This is a breakthrough technology, magnetic concentration. We don't need water. We can produce pellet feed, sinter feed, high-quality ore. This is something that we have a lot of flexibility. We can bring this plant closer to the mine or we can locate close to the client. That's a flexible plant, simple plant, and believe, we are doing something that we are not considering that we are using this technology as a cleaner. We produce the pellet feed for blast furnace and if we use this process, we can upgrade to the direct reduction of pellet feed, to use for pellets, and you know very well that the direct reduction

route will be the product in the future when you consider the decarbonization process.

Now going to the co-products. You've never seen this before with us, but it's not something new inside Vale. Just to bear in mind, if we're going to generate 50 to 60 million tons of materials coming from filtration, dry concentration, and dry processing. A lot of materials. At the end of the day, it's about sand with some part of iron. Now you're saying that it's Vale sand. We've been using this in testing. Now we have permits to use the sand in an application for cement, concrete, mortar and also high-quality products like quartz.

This year we sold and donated 750,000 tons of this material. We're planning to go next year to 1.4 million tons. What is the rationale here? As we need to move the size of 50 to 60 million tons, we need an area. If we need an area, we need permits. If we need permits, we need a timeline to get the permits. If we don't get it, we can jeopardize the production of iron ore. That's the mindset here.

The beauty of this action is that we can create value and we can share value with our communities when we bring industries related to the sand and also donate paving works close to our communities. This is something again you're going to hear a lot in the future in Vale.

I'm talking about a new way to operate. This is nothing new here when you see the extended supply chain. We have the capability of logistics. We bring, I don't know, from Brazil to China or from Europe. We need to be good in logistics, but I want to drag your attention for something new that is in this chart here.

First, in the blending strategy we're not only using our more than 17 ports in Asia to blend our products to form BRBF, but now we are bringing others to do as one product to our client. We want to serve our clients, be close to them, and reduce their costs here. That's one thing really nice that is going on there.

Other information from the port side, for a lot of years we used to touch only four berths, actually less than that, with our Valemaxes in China. Only this year we now are berthing seven ports in China. We are going to nine ports next year. It's bringing already a lot of flexibility and making our fleet faster and moving better.

On my right-hand side, you see the concentration of facilities in China. We are taking advantage in their capacity to concentrate that. As we are

ascending high silica ore through China, you know that this year we are now concentrated in China and selling the sand there. This is a niche yet, but there is a possibility to grow. Again, the main message here is you're closer to our clients in China and all the world to strengthen our relationship.

Well, now let's go to the numbers. I know you love it. On my left-hand side, capacity. This is the chart of capacity and we're going to talk about the production in some minutes. We have the capacity today of 341 million tons. We're going by the end of next year to 370 million tons of capacity. We're going to do this. Right-hand side, the roadmap.

The beginning of next year we don't expect to improve our volumes, but we are bringing in quality. You saw the progression of the filtration, so we are converting our capacity of high silica ore/low silica ore to pellet feed, to high-grade ore. The main impact at the beginning of the year is related to quality.

During the year, in the North we have very good news. We have several products that are coming online. I'll remind you. S11D crushers, S11D plus 10. We don't consider that they're going to bring volumes to the total number to Vale because we are offsetting and remember that we have a delay in what we call rolling licensing in North branch, so we don't have on average the increase of volume in the North. But it will be really important to the increase that will happen in 2023 in the North. But it's an important roadmap in the North. By the end of the year, we are going to bring capacity to the Torto dam in Brucutu and also the raising of Itabiruçu in Itabira. That's a roadmap.

Now moving to the numbers of production. First information here, we are narrowing the guidance for this. We are in the guidance and we are just putting the difference now 320. For next year, our production guidance is 320 to 335 in two messages here. You know about this. Value over volume is our mantra, yes. This number of production is what we believe the market will need in terms of volume, but in terms of quality that we can deliver. That's our vision.

I want to direct your attention again for one more information that is in this chart. Higher Fe content, take a look at what is going on in 2021. We're improving the quality on average to 63.5 in iron content. It represents today around \$350 million in margins, only considering the impact of the quality. I'm not talking about the premiums here. Those are the numbers for this year and next year.

Moving to the second chapter of our presentation, why Vale is ready now for the future for this greener world. There is a commonsense of the roadmap, the pathway to decarbonizes these two industries. I think we have seen every time that we need to reduce the use of blast furnaces. Today, 73% of the steel mill production is based on blast furnace. We are going to move to the direct reduction route using in the beginning the natural gas and later the hydrogen. That's the main pathway.

In the first decade, we need to improve the efficiency of the blast furnace. We need to reduce the emissions of the blast furnace. That's the whole picture we have.

Beyond the use because everybody is connected to the client, we are bringing solutions now. We are bringing products and services now. That's what Eduardo and also Luciano said. We have three main actions here, three main ideas to attack this necessity.

The first one: increase the quality portfolio. We are talking about expanding the north, Carajás finds. You're talking about dry concentration, expanding the pellet feed production. That's our roadmap of production. That's what we do.

Second action. We strongly believe that we're going to need what we call agglomerated products. In any route of direct reduction or to reduce emissions in the blast furnace, we need pellets. We used to have only one kind of product here, pellets from pelletizing plants. Now we have the green briquette also. We are talking here about 100 million tons of capacity in a few years to serve this market.

Third, we call asset light solutions when we have technology inside value like Tecnored that is a melter or a furnace, and we also can collocate the briquette plans or the dry concentration plans with our clients and design the best solution through this journey of the carbonization. That's our roadmap. That's what we've been doing.

I want to deep dive. I really love this green briquette. We've been developing this for more than 15 years. When I arrived at Vale, again, I saw this. This is an amazing solution for our clients. We can reduce 10% if we use this product as a substitute for lamps or as a substitute of sinter. We can reduce 10% in our scope 3 emissions or in our emissions in the blast furnace for our clients.

This is half of the Opex compared to the pellet plants and is one third of the Capex intensity if you compare it to the pellet plant. This is an

amazing solution. We have already under construction 7 million tons of capacity and we are planning to expand this to 50 million tons of capacity. That's a breakthrough. You'll see a lot of these initiatives in the near future.

Finally, to close this session I want to emphasize two things. The two main takeaways that I can see from this journey to decarbonize--we can see two things. One is just what Luciano said. We need for any route to decarbonize, high-quality ore. That's our mantra. We need high-quality ore, and Vale is really well positioned to do that.

The second takeaway is never in this world of mining industry has to be so close to the steel industry. Never. We need to work together. That's the reason why last year--this year actually--we engaged with more than 40% of our scope 3, our clients. So, there's no solution without them. We need to work together to find in the fight against this challenge.

Now moving to the final part, the third part: how can we rebuild Vale's competitiveness? Well, I'm going to use the all-in costs to show this roadmap and the plant-based analyses in three components, the C1, the freight, and the premiums. Another common sense is that if you increase our volumes, we can dilute the cost. It's right. We are still growing our production. When you reach 400 million tons, we can dilute our costs. It's right. But there's another point here that I want to emphasize, that we are producing with a lot of constraints or inefficiencies that we need to remove.

There's another point here that we need to add. I'll give an example with Timbopeba site. We had Timbopeba production halted in March of 2019. We brought back this production in May of 2020, half of the production. This year in the first quarter we brought back the remaining three lines in Timbopeba, so we got the full capacity, but we didn't produce the full capacity for a year. Next year we're going to reach the full year capacity for Timbopeba. That's the impact we see, a 20% in reduction of cost, because we are just producing in a leaner way in the full capacity coming from 27 of the unit cost to 21. That's impact. And in the near future when we bring the Capanema project in this site, we're going to 15. That's the same pattern you see in Vargem Grande, Brucutu and Itabira. It's the same. So, it's important to consider in the near future.

Now I can bring the numbers of C1 costs. We are saying that we are coming this year from 17. I'm not considering here the impact of third-party purchase. We are going to reduce \$0.7 coming from dilution or increase in volume. The cost efficiency that I just mentioned represents another \$1.

Once you say something here, in spite we have a leaner production in the future, when we restore our capacity, we are committed to bring also an optimization in cost. Gustavo will show more colors about that, but we have part of this number related to the cost optimization that we already started. We are at the turning point of cost in Vale and we have the analysis for 2023. That's the reason why I put this timeline here, because we are going to have some value from that.

In 2023 we expect to have the C1 in 15.5 to 16 and if we consider the evolution of the production, we have another \$2 decrease into \$14 to \$15 a ton and long term. Just to compare to the number that we gave to you two years ago and one year ago, we have some adjustments here. The inflation that we had in the last two years is huge. Also, we adjusted our perspective about geotechnical costs and also some depletion. That's the reason we are changing our long-term idea for C1.

Second component is freight. You know very well about our strategy in freight. Big vessels, we have a long-term fleet. We've been working hard to offset the impact of IMO regulations, so it's working well. If you see the 27 compared to 19, it's a huge protection that we have. What can you expect for the future? A reduction of \$3, part of that coming from the market conditions, spot freight, and the bunker, but we also have 20% of this number coming from an improvement that we can improve the fleet and also the Eco shipping. That is program that you can reduce the consumption of fuel. It's going really well. We are already passing our fleet and we can capture value from that. Our long-term vision from this component is \$16 a ton in the long term.

The third component is premiums. We always say that our clients are willing to pay premiums if they consider some factors here, if they are making money or not, the margins, if they need to improve their efficiency, their production, they need to save the cost of energy, coke, or you need to consider the availability of high-quality ore to get this value from the premiums.

That's going to happen when you see the past, when you see the history in 2018, when they had the supply side reform. They were making a lot of money. They needed to improve their capacity, so got the premiums that time. That's going to happen this year in the first half. We need to add another point here: the cost of the coke in China. It was in the very high level, different from the second half of this year. What can you expect for the future? Near future? We're going to bring back the pelletizing capacity. I'm talking here going back to 50 million tons on average or more and also

add in the briquettes to this premium and increase of Carajás production, we bring in another component for the premium in the short term.

In the long term, we may consider that the cost of carbon and as Luciano said, all the journeys we see, all our products we have premiums because of the capacity to give more efficiency to reduce the CO2 emissions in our clients.

To summarize this, we expect to reduce \$10 in our all-in costs coming from 45% to 35% when we reach 400 million tons. We have a step in the middle. That's in the middle, \$40 per ton in 2023. That's in the middle. If you believe that the price of iron ore will decrease, we have an extra reduction here coming from the royalties and the impact of the third-party purchase. An extra reduction can come from the premiums in this new green world, so we can reduce, can be below \$30 a ton our unit cost, our all-in cost.

Before I pass to Mark, I want to emphasize three main things. First one: we are committed to bring back the 400 million tons capacity. It's important to get the full leaner production, the full capacity to get the best cost in our operations. The second message you know very well--I'll say again--value over volume is our mantra. We're not going to produce if the market doesn't need it. We are not going to deliver something out of the quality they need, so we're going to stick to our strategy of value over volume. Third, definitely Vale is the supplier of choice of the steel-making industry for this new green world. Mark, I'll pass it to you.

## **Base Metals Transformation**

MARK TRAVERS|EXECUTIVE VICE PRESIDENT OF BASE METALS: Thanks Marcello. In base metal in Vale, we recognize that we must succeed in the Base Metals transformation, where base metals contribute significantly to the Vale of the future. But we recognize that 2021 was a challenging year, where things did not go according to plan: Salobo broad safety and maintenance reviews led to suboptimal mine movement impacting production significantly in the first half of this year, delays in the maintenance in Sossego impacted production, and a two-month strike in Sudbury.

We know that we need to exercise the levers that Carlos Medeiros spoke about earlier, safety risk management, as well as operational excellence. That's where our journey lies. It wasn't all bad. We did have some successes where we did make some progress. On the risk side and safety side, just last week the Voisey's Bay mine was awarded the Miner of the Year by the

Canadian Institute of Mining and Metallurgy for excellence and safety risk management through the operations, as well as the construction of the underground mine.

On the production side, we had good success on a number of our surface operations. Long Harbour is ramping up well. Our refineries in Sudbury, Long Harbour, as well as in the U.K. have operated very well, as have our smelters in Sudbury and Indonesia. It sets the course for a bright future.

In 2022 is the year where we must succeed in our base metals transformation and show progress. Here I'll review our copper and nickel guidance for next year. On the copper side, our production guidance is 330,000 to 350,000 tons of copper. Significant point here compared to last Vale Day projection on copper is the absence of the startup of Salobo 3, which has a significant impact in our production next year.

We must execute on our key milestones that I've set out here. The first one is a milestone for both copper and nickel. We need our Sudbury mines to produce. We need stable production coming out of our mines. We need to improve that mine movement and production in Salobo and we are making good progress. We're hitting the right rates for next year as we speak in Salobo mine. We must execute well our SAG mill maintenance in Sossego. On the nickel side, our production guidance is 175,000 to 190,000 tons, primarily impacted next year by the rebuild of one of our four furnaces in PT Vale. As I mentioned, key milestone is the Sudbury mine production and the ramp-up of two critical replacement capacity projects, the Voisey's Bay underground mine, as well as the Copper Cliff mine expansion in Sudbury. We need to make sure Onça Puma produces stably next year.

I want to talk to you about what we see as a very bright future for our copper portfolio. In this picture here, this is a picture of the old Igarapé Bahia gold mine in Carajás region, which is the future site of our Alemão copper project. Let me tell you a little bit more about our copper portfolio in Carajás and the bright future that we see.

We see Carajás as a tier one copper mining complex. It is now and it will be growing in the future. I just want to orient you a little bit to highlight the proximity of a number of our copper/iron ore operations in the Carajás region, leveraging off synergies in the area.

I'll point out the two red dots. On the bottom right-hand corner is our Sossego mine. You have the proximity to a number of projects, all of which I will review in the coming slides, such as Cristalino and some of what we call our satellite projects like Bacaba and Visconde.



On the top left-hand corner you have our Salobo property. Underneath that, you have the future Alemão project. Over to the right of that you have something that we call the North hub, with a number of potential deposits that we've been drilling, such as Paulo Afonso and Furnas.

We are advancing on Salobo 3 and it's coming on stream next year with ramp up beginning in the second half. It will be contributing over life of mine 30,000 to 40,000 tons of copper. Earlier years it will contribute more. In fact, by 2023, you will see an excess of 50,000 tons of copper coming out of Salobo 3.

We are also looking at a future expansion of Salobo 4, which could result in an additional 30,000 tons of copper. We're currently studying that. I will highlight we still have coming the gold stream payment once we demonstrate through commissioning, depending on timing and ramp-up a potential payment in excess of \$500 million, again, in 2023.

Here's a little bit about the potential for growth. Alemão, which I've mentioned, will add approximately 60,000 tons of copper and about 100,000 ounces of gold per year. The investment decision will come at the end of next year or beginning of 2023, dependent upon the environmental license being issued. Discussions are going well, but it will take that time before we get that permit.

In the middle, I'll talk a little bit about the South hub. The Cristalino project is absolutely necessary for the ongoing operations in Sossego as the Sossego mines diminish in the coming years. The studies are going well for Cristalino, but we also have the satellite deposits, a number of deposits in close proximity to Sossego, where we are looking at the options of bringing those forward in feeding the Sossego mine and actually providing an opportunity for further expansion of Sossego.

We're looking at that North hub that I mentioned, the Paulo Afonso and Furnas. We had significant exploration; 60 kilometers are drilling this year. We are seeing the resources being increased. This could be a project or a number of projects that add 70,000 to 100,000 tons of copper in the future.

Switching over to Indonesia, we have what we call a world class copper discovery. We see it as the third largest copper find in the past 10 years. Since the last issuance of a resource statement in February of 2020, our studies and our drilling have de-risked that project and they have added about 15% contained copper to the project. We estimate that this project could produce between 300,000 tons and 350,000 tons of copper within excess

of 200,000 ounces of gold per year for the next 45 years. This potential project is high tonnage, high grade, and low cost.

Just pointing out in this slide, the details aren't important. It's just about the work that we're doing to make sure that this comes on stream. If you put it together, what we're doing is investing in the midterm to stabilize our production, adding in Salobo 3, our production gets above 400,000 tons per annum. Then when you add in south hub, Alemão, and the Victor startup, a mine in Sudbury, Canada--we're looking at a joint venture with Glencore--we're above 450,000 tons of production past the middle of the decade.

Then on the right when you add the growth of the North hub, Salobo 4, South hub expansion, and Hu'u, we're more than potentially doubling our copper production in the next decade. There are not many players who have this kind of copper portfolio.

Let's talk a little bit about nickel. In the Base Metals transformation, there were a couple of key levers that we needed to execute on in the past few years. One was dealing with the difficulty of New Caledonia, and one was replacement capacity of our mines in Canada. Here's a little bit about both. Earlier this year, we did successfully transfer the New Caledonia asset, finding a sustainable solution for the continuation of that project, but we have taken it off of our hands.

On the right-hand side you have a number of advancements that we have made in the replacement capacity in the Sudbury mines, the Sudbury mines with the [break in audio], getting first ore in the Copper Cliff mine extension. We've had first ore received in the Reid Brook Voisey's Bay underground mine. Significantly, we approved an investment of \$120 million to expand to Thompson mine by 10 years, also adding potential production increase of about 30% by 2023 and 2024.

Our portfolio makes us very well positioned to pivot towards the growth of the EV supply chain in North America, as well as Europe. Our mines are producing the nickel that the industry wants. Our class I nickel, as Luciano was saying, is low-carbon, strong ESG credentials. We're currently selling about 5% of our class I nickel to the EV supply chain. We anticipate that growing to 30% to 40% in the coming years.

Listed a couple of other opportunities here that are in our hands as well. The critical minerals that are going into the EV batteries will lead to an issue that we need to deal with as an industry, providing a solution to the OEMs to recycle that material and bring it back into the supply chain,

creating that circular economy. We have tested and can recycle what we call the black mass in our current flow sheet to recover nickel and cobalt.

Finally, we are looking at a nickel sulfide plant investment with a decision at the end of next year. We're having very good discussions with the Canadian government, as well as the Province of Quebec.

Delivering on the stability of nickel, I'm going to talk on the next two slides a little bit about how we support the Canadian mines for the decades to come. In this slide, we're talking about what we're doing in the mines today. As I mentioned, we're ramping up the Voisey's Bay underground mine. Next year we'll bring on Eastern Deeps, which is the second of two mines in Voisey's Bay, replacing the capacity of the open pit.

In the middle, as I mentioned, the Manitoba extension. We approved that. we're going to see advances in 2023, but we're also studying and doing significant drilling of what we call phase II, which could extend the Thompson mine for decades to come. We're also studying in Sudbury. The Copper Cliff mine has extensions 3 and 4 that the studies--we've just completed pre-feasibility studies and we're looking to make decisions in the coming years. There are other studies that we're also doing, such as the Creighton Deep and other things, and surface deposits, where we will be advancing the engineering and bringing them soon for decisions in the coming years.

Also, Onça Puma. We're going to be looking at the investment decision on the second furnace in Onça Puma early next year. This deposit has an extended life of many decades and has the potential for future furnaces 3 and 4 if we so choose.

This slide, I want to tap into something that is critically important. In Canada, we have the largest nickel sulfide resources in the world, high-grade polymetallic orebodies, and we own a great deal of this. We are investing the money in the drilling and the studies to make sure that we have ore for decades to come. We have a very extensive drilling program, 300 km per year of drilling in and around our current mines in Sudbury, in Voisey's Bay, and Thompson. Voisey's continues to look to extend the Reid Brook and Eastern Deeps well past the current mine life of 2034, 2035. In Thompson, we're doing the drilling in the current mine, but there are many other areas that we're drilling around the Thompson nickel belt, including a large tonnage ultramafic orebody. In Sudbury, we know there's more to come in a mining camp that's been around for 120-plus years.

We also have unique access in Indonesia. In the coming year, we will be

making decisions about expansions in Bahodopi, where we've just announced this year a joint venture study with Bah Wutisco [phonetic] in Shanghai. Then we also have the investment decision on the Pomalaa-HPAL project. These two projects together can add 110,000 tons of production in the coming years. We will only be doing these with partners.

In the end, with nickel we're building a stable business. We'll recover and stabilize at a production rate of 200,000 tons per annum, increasing to 220,000 once the Onça Puma second furnace comes. But more importantly, as we go through the Base Metals transformation, we become a stable operator, we reduce our unit costs, and we have optionality for growth in the future.

In summary, in transforming the Base Metals business. We're creating a solid base for the future well positioned to participate in the build-out of the EV supply chain in North America and Europe. We have a tier 1 mining complex for copper in the Carajás region in Brazil, and we have unique access to optionality and growth in Indonesia. With that, I'll pass it over to Gustavo Pimenta, who's going to talk to us about capital allocation and a future vision for Vale.

## **Discipline in Capital Allocation**

GUSTAVO PIMENTA | EXECUTIVE VICE PRESIDENT OF FINANCE AND INVESTOR RELATIONS:  
Thanks Mark. Good morning, everyone. This is my first Vale Day, so I'm very excited to be here and look forward to working with you all. I'd like to start with this first page that we are all very familiar with. I think Eduardo highlighted some of these elements over the last couple of years. Those are the three themes of our value creation of our equity story. The themes are de-risking, which we talked about today; reshaping; and re-rating. What I'd like to do today is to go over a few of them, the most relevant ones from a financial standpoint, and share with you at least my first initial impressions in terms of potential re-rate of Vale's stock.

Starting with the reparation agreement, I think Eduardo highlighted we've had a lot of progress this year. Up to the end of 2021 we should have fulfilled approximately 55% of the obligations that we had under the agreement. If we look in terms of cash flow projections, '21 was a very heavy year for us. We've disbursed approximately \$2.5 billion under the agreement, which is good in terms of getting those things behind us in terms of financial responsibility. Over the next couple of years, the responsibility and the payments and the disbursements should be anywhere between half a billion and 800 million dollars.

Renova is another one in terms of de-risking. Samarco is back in operation since the last time we talked, so that's positive for the business. We see 2022 as an important year in terms of accelerating individual indemnifications, following some of the federal court orders. We also see a year in terms of finalizing, the opportunity to finalize the revision of the 42 programs under the existing framework that we have, so that is going to be a busy year for Renova from our standpoint.

In terms of simplifying the portfolio, in terms of reshaping, kudos to Luciano and the team. We have done a tremendous job from my perspective in that regard. We've sold a lot of assets. We've resolved a lot of assets that were underperforming in our portfolio. Specifically, in 2021 we sold and got rid of VNC. That was a drain in terms of financial performance for us. We were also able to monetize a non-core asset, our stake at Mosaic. We should expect this to continue to be very focused on portfolio optimization. We want to make sure that every single asset that we have in our portfolio makes sense to be there. It's adding value to the portfolio. We are currently working, as we've mentioned before, on Moatize in Mozambique, our coal asset in Mozambique. We hope to have news there very soon. It's a non-core asset [break in audio]. Put that as part of our sales process and we are moving forward as expected. The same with CSI. You should expect us to continue to trim down the portfolio and be focused on what we are good at.

What is one of the benefits of the simplification of the portfolio? Here is a list of assets that were classified under the category of underperforming assets over the last couple of years. As we sell them, you see that going forward in terms of cash drain gets to zero. We were spending anywhere between half a billion and 2 billion dollars in those assets over the last couple of years. It's a very significant relief in terms of cash pressure that we have.

In the case of Moatize, even if we don't sell, we're not expecting to have any cash need in that business because we've ramped up the production and we are already in positive EBITDA territory. But anyway, I think it's very positive when you compare Vale two years ago versus today. Those were very important improvements in terms of the cash story of Vale.

This is new: we are announcing today. I think this is a very important priority that we are putting together. Spinelli highlighted some of the things that he's doing there. We are announcing today an initiative program that was discussed and approved with our Board to reduce the overall cost of Vale total at a billion dollars. That is on top of or over our total

fixed cost plus sustaining. We are about 14 billion there. We want to reduce this by a billion dollars.

Where are we focused on? We have three main levers here. We have productivity gains, so Spinelli highlighted removal of inefficiencies as we ramp up and recover production; better planning as we implement VPS, improve things like tool time. There is incorporation of digital solutions that we can reduce OpEx. We appreciate the need to get leaner, so there is a second large initiative here associated with organizational redesign. We will pursue that. And sourcing with third-party services. We buy more than \$10 billion, so we see an opportunity here to review scope, review specification, and control internal demand. All of that should be bringing us about a billion dollars of savings.

The good thing is we are already expecting to have benefits in 2022. Our expectations for 2022 are to have flat costs compared to 2021, even with all the inflation pressure that other sectors are suffering. We will be able to absorb that as we implement those programs.

My idea is that we bring this in more detail in our Feb call and we monitor this quarterly with each one of you guys, so you guys will see the evolution of this program as we go along.

What does that mean for us? We free up cash for growth, so there is an opportunity here for us to continue to grow organically in a very accretive way. We are not talking about M&A here. We are talking about expansion of existing facilities where we will have a lot of synergies to expand, so I think Mark highlighted some of them. Some of them have been approved and we are pursuing, but we have more to do. I don't think based on everything that I've seen so far there is anyone better prepared in our space to drive the energy transition. I think we highlighted the quality of the products; we see opportunities to grow incorporating Carajás - very synergetic. We see other resources we have in nickel. I think Vale is very uniquely positioned to capture value as we continue to grow this business.

Capital discipline is a major focus of mine and it has been a major focus of Eduardo and team and Siani. Last year we returned 90% of our free cash to shareholders. We appreciate and I fully recognize there is no better investment today than buying back my shares. We have that very clearly and we will make sure that we will continue to be extremely disciplined on how we allocate every dollar out of this company. This has been the case. I think we have a very attractive dividend policy; 30% of EBITDA minus sustaining. We will want to continue to be extremely disciplined on capital allocation and we can talk a little bit about that in the Q&A.

This is a slide to try to show what is out there in terms of potential value unlocking for Vale. We've run some scenarios in terms of sales volumes. This is a 2023 timeframe, and I will explain you why. We've run a couple of scenarios in terms of volume of sales, different prices. You see us being able to generate anywhere between \$17 billion and 24 billion of EBITDA in that timeframe, with a Capex of about \$6 billion. Our expectations for the total Capex including growth should be between 5 and 6 billion dollars.

If you run the math here, you're going to see us with the ability to provide a significant cash flow for our investors. I do appreciate in the very short term we have some challenges. We have what I'm calling here transitory expenses if we take Brumadinho and then de-characterization, Renova, plus some of the assets that were underperforming in 2021. All of that cost us \$4 billion in 2021.

We do expect 2022 to be also heavy. We still have some of those commitments pretty much along the same lines. Maybe different zip codes, but the magnitude of the spend is probably going to be as relevant in 2022. But we shouldn't expect this to stay there. This will get resolved and we are resolving those issues. Once we do that, we should be able to unlock significant value for our shareholders.

What is the thesis here? I'm combining my so far four weeks on the job my internal view, with some fresh eyes as well. I do see very clear catalysts for us in the next 12 to 18 months in terms of unlocking value. If you take the three categories here, you have de-risking, so in 12 to 18 months we're going to have a substantial progress on reparating liabilities. We've talked about that today. We will have six dams to be de-characterized. Medeiros talked about all the progress we've done there. And we have closed all of the ESG gaps. That's very important because a lot of the overhang in the stock we know is associated with the risk perception. We will be resolving that and we expect in 12 to 18 months to be in a much better position.

Capacity increase. This is very clear. I mean you have two main categories. I'm not talking here about 5, 10 years for 100 million tons. What I'm saying is in the next 12 to 18 months, we should be able to bring 30 million tons assuming the market can absorb that, value over volume will prevail, and we should be able to have Salobo in operations. Just those two buckets is \$2 billion of margins that we are bringing to the business.

The third one is cost reduction, another billion. If you sum it up, you're going to see us in 12 to 18 months--and we feel good about delivering those--be able to unlock significant value to shareholders and to have a different

Vale in terms of financial performance by then and financial projections.

It's very exciting from our perspective. I think those things, a lot of them, are in our control. I mean we have a lot of visibility about delivering on them, so I'm personally very excited. Our commitment is as we go along, we want to check the box and show you guys the progress along those items. With that, we will open up for Q&A. I think we have time to assemble, and we will get started. Thank you.

## Questions and Answers

IVAN FADEL|HEAD OF INVESTOR RELATIONS: We just need about 30 seconds, one minute, everyone here sitting on the stage. Then we can start with the Q&A. As I said in the beginning, please raise your hand. We're going to try to take as many questions as possible here from the audience. Also, we're going to be taking questions online. You just need to send to the email address that is on your screen. Just bear with us for about 30 seconds or so. Thank you.

[Pause]

THIAGO LOFIEGO|BRADESCO BBI: Let's go. Good afternoon. Thank you for the presentation. Thiago Lofiego from Bradesco BBI. Two questions. Spinelli, on the guidance for next year, how much of those tons will you not be selling depending on the iron ore price? Basically, if you consider today's iron ore price, how much of that you think you're not going to be able to sell? Maybe another way to ask this is: what kind of price level have you considered for that specific guidance?

Then my second question is on the cost for 2022, the all-in cost. I'm not sure if it's for Spinelli or for Eduardo or Gustavo. But thinking about the all-in delivered cost for 2022, are we talking about \$45 per ton give or take given inflationary pressures, C1 costs are going to be stable? Are we talking about \$45 per ton level for delivered costs for next year? Thank you.

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: First of all, production. We're not considering selling what we did this year, the high silica and all the low-grade ores directly to the market. We are using our supply chain to blend and sell as our BRBF blending product.

Again, to sell directly, it's not a question only of the level of the price.



It depends on the freight. Freight is a very important component. And discounts. Discount of the high silica was really high, so we're going to track this. Remember that we're going to convert that high silica in high-grade ore. When you do these, reduce the mass. In the beginning of the year there will be more availability, capacity of this high silica. During the year with filtration, we are reducing this capacity. You can ask this question: what is the availability of this high silica? It can be 10 million tons in the beginning of the year, but during the year, reduce this possibility. Again, we're not considering this number inside of our guidance.

Related to the costs, you're right that we consider C1 stable for next year, stable with a lot of work because we are offsetting the inflation. It's hard work in Brazil. All over the world, but in Brazil specifically we had an impact. But we are considering the other components, freight probably slightly lower than this year, the macro conditions for that. It's an important point. Probably offsetting the better Fe content; the quality will be better. The premium will be better because you saw the impact and you see the impact of the high silica in our average of price. So average is slightly lower. It can be a good view for that.

THIAGO LOFIEGO|BRADESCO BBI: Thank you.

DANIEL MCCONVEY|ROSSPORT INVESTMENTS: Thank you. Daniel McConvey, Rossport Investments. A couple of technology ESG questions, which is unusual for me. Who's in charge of the electrification storage products you're looking at? How is that managed in the company?

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: We have in our business different perspectives.

DANIEL MCCONVEY|ROSSPORT INVESTMENTS: Can you describe what the hierarchy is and what are the big products you're looking at and if you're doing it directly or doing it through consultants? How is that working?

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: Yes. For scope 1 and 2 we have the MAC curve, all the projects in our pipeline to reduce to the end of this decade. We are considering for whole Vale, but actually, for iron ore is more intensive, but it's a 4 to 6 billion dollars to invest. We have several actions. The main action is in the pelletizing plants, was the main impact for that, so kind of action is related more to source of energy to change the coal or use biomass. The actions are related to that. Electrification. We have in the railroad called the belt, locomotive. That

is you're already ready to shift, but we're going to put it in long range. We also have a development with the suppliers for the trucks and we are already investing in catenary. For electrification in part of the mines. The roadmap is a transition today bringing some electrification in parts of the consumption of fuel of diesel but going to a full electric vehicle with the trucks and the locomotives. I think you have also other initiatives

MARK TRAVERS|EXECUTIVE VICE PRESIDENT OF BASE METALS: Yes. In terms of electrification as Luciano's video showed, we obviously are bringing in electric trucks and loaders, etc., into the mines. We're testing more. We have 40 coming in by the end of the year, but there's obviously a lot more work. If it's question around broader decarbonization, then we get into some other initiatives. For example, replacing diesel fuel, Northern Labrador with wind power, and things like that. We obviously have similar-type process where we're trying to replace coal and carbon and things like that with heat recovery and biomass, etc. Very similarly we have our own agendas into this MAC curve.

DANIEL MCCONVEY|ROSSPORT INVESTMENTS: On briquettes, this is this new technology which I'm not that familiar with. Can you describe how it works and how much carbon--if you can quantify the carbon savings per ton of steel produced?

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: We agglomerate these products. In a pelletizing plant you need to use the furnace to agglomerate the product and other binding components. It's almost a cold agglomeration with the briquettes. We still use furnace, but for the end of the process. We don't use this to agglomerate, but just a kind of final part of the process. Thinking about scope 1 and 2, we can reduce by 80%--85% if you compare to a pelletizing plant--in terms of intensity, emissions of CO2. This is our side.

Our client side, in scope 3, this is really important. The beauty of this is that as a cold agglomeration, we can mix some other kinds of products, so we can make this briquette acid or basic. If they are acid, we can use [break in audio], just direct charging in the blast furnace like a lump, like a pellet. But you can add other components like NGO. It's impossible to do this in the pellet. It's impossible to do this in the sinter. But you can do this with the briquette and put inside the blast furnace. This is amazing. This is a breakthrough because we can in the metallurgical technical information, in a simple way you can keep the furnace with more efficiency, higher level of heat, and the efficiency really goes better and better. That's the idea.

We already tested this technology in five furnaces, big ones, not only small. This year we are converting two pelletizing plants into briquette plants and we have a new one in Vargem Grande. We are already doing this and testing together. Because it's going really well. The results are fantastic and our clients are really excited about that.

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: About 10% reduction on the route. It's a matter if we're going to replace the pellets by the cold agglomeration. We don't see that today, so it's not in a MAC curve substituting our pelletizing plants. Those two were very old plants that we decided to adapt to the briquetting. When you see 100 million tons of agglomeration, it has to be pellets on that as well. Our plan for briquettes is around 50 million tons. We believe it's a real breakthrough. As Spinelli said, we tested it already in big furnaces. We are very optimistic that it will work very well. It's transition part now.

CARLOS DE ALBA|MORGAN STANLEY: Good afternoon everyone. Thank you very much. Carlos de Alba with Morgan Stanley. First question on iron ore, maybe just following up on the conversation. Just to confirm the iron ore guidance, does that include third-party purchases? And what are you thinking about iron ore inventories and potential sales of those prior to bridge production versus shipment? On green briquettes, have you signed any contracts? Do you have any firm orders for the capacity that you are investing or in the future?

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: Yeah, we considered the third-party purchase. The level that we purchased this year we're not repeating probably for the next year because part of that was based on high silica products. So, it will be an average what happened the last year or before that. I think this year was a peak in terms of third-party purchase.

We don't have yet. There's a list to make this contract. The first round we expect to launch this, to start up in the beginning of 2023, so we have the whole year to make this happen. This amount today will be probably the go-to to Europe, part of that, and part will be in Brazil, so the main clients that we are targeting today. But the roadmap to 50 million tons, we cannot only consider the production as a hub like the pelletizing plant, but we can consider collocating or to be closer to the clients, go to Europe, go to the site to expand this capacity. In this case, we need contracts with the clients in the long-term relationship. But we don't have yet, Carlos.

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: But we have MoUs. We tested already, so it's going to be like a step-by-step change to adapt. We talked to some

steel plants in Europe and they said look, this is of course a technological change, but we are pretty confident. As Spinelli mentioned in the beginning, it's 15 years of studies and we did a lot of tests to be sure that this agglomeration is going to work out.

CARLOS DE ALBA|MORGAN STANLEY: Let me make my last question maybe a combined one. I'm going to cheat a little bit here. Gustavo, any comments on the dam de-characterization disbursements in the coming years? Maybe I missed that. Then maybe Alexandre, I'm going to take the opportunity that you are here as well to make a comment. We have seen a lot of news since Friday on the investigation of the federal police. What does that mean in terms potentially of the agreement that you have already very thoroughly negotiated? Does this open the possibility for potentially higher payments? Thank you very much.

GUSTAVO PIMENTA | EXECUTIVE VICE PRESIDENT OF FINANCE AND INVESTOR RELATIONS: On the de-characterization disbursements, it's anywhere between \$300 million and \$500 million per year, so that's what we should expect for the following decade.

ALEXANDRE SILVA D'AMBROSIO|VICE PRESIDENT FOR LEGAL AND TAX: Carlos, thanks for the question. Last week we saw the federal police issue a report where they pointed out basically the same charges that the state police and the state prosecutors had pointed in the past. Recently, the supreme court decided that the jurisdiction for this case should go to federal court, rather than state court. By doing that, the supreme court dismissed all the charges that were brought in state court. Hence, federal police and now federal prosecutors would have to evaluate this report and decide whether to bring these charges now in federal court.

Specifically about your question, nothing changes in the Brumadinho reparation agreement, absolutely nothing. Also, because that agreement did not address anything criminal. Purposefully it wasn't a plea bargain or anything like that and not a deferred prosecution agreement. What it was, is a settlement that solved all the civil actions, all public civil actions, collective actions brought also by prosecutors and the state. I think that's simple.

LEONARDO CORREA|BTG PACTUAL: Good afternoon everyone. Thank you very much, Vale, for the presentation again. It's a pleasure to be here. Leonardo Correa from BTG Pactual. The first question is for Luciano. During your presentation, Luciano, you mentioned on the ESG roadmap for scope 1, scope 2, which is in Vale's control. I think the big question that the world is asking is scope 3, where Vale basically can help. But at the end of the day

you need the Chinese steel industry to invest trillions of dollars to decarbonize and we know that the steel industry is one that most pollutes. I just wanted to hear you, how these conversations have been evolving with counterparts in China and how confident you are that scope 3 will be reduced going forward.

The second question maybe for Eduardo on diversification. It's an old theme. Vale did its move in 2006 with INCO. Over the past years the story has been to focus on the core. How do you see potentially looking at greener metals and diversifying into other businesses? Vale is still seen as an iron ore player, a pure player, trading on 3 times EBITDA.

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: That's true.

LEONARDO CORREA|BTG PACTUAL: Just if you guys are potentially looking at any targets to diversify. That's it. Thank you.

LUCIANO SIANI PIRES|EXECUTIVE VICE PRESIDENT OF STRATEGY AND BUSINESS TRANSFORMATION: The difference between us and other peers is that most are celebrating--and we are as well--MoUs with clients to investigate ways of reducing emissions. Right? But basically, these efforts within Vale are different because we come in with a suite of solutions and we offer detailed knowledge of our clients to see how we can fit in those solutions within their plans. We have the briquettes. We have, for example, the Tecnored technology to produce pig iron with biochar. We have potentially HBI. We have this ability to using the cleaner to increase the grade of our blast furnace pellets towards direct reduction.

Another agglomeration technology that we are developing. For example, for biochar, instead of them getting coke in their blast furnaces, they're getting a kind of briquette also from biomass. We're coming in with a suite of technologies. Some of those technologies they open up product opportunities for us. That we believe is the difference between our approach and others. We're just not going to the steel makers and going, "What are you doing here?" We're offering a suite of solutions and we hope that this way we can find a path.

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: I think what Leonardo is trying to ask is how serious the Chinese are on that. I think we just had a meeting--when was that? It has to be last week with CISA. We truly believe the Chinese are on it. When we talked about like the MoUs that we just signed, I met Mr. Xen in Brazil and he's very excited with the agglomeration of the briquettes. We didn't have the green briquette yet; we just had the agglomeration. So, he knows because he's a very--so I think Chinese take

it seriously. One of the reasons they stopped their growth this year, you know how they pushed the brake on China. It's because the carbon emissions, that they had targets already. I think they are on that and then as Spinelli mentioned, we have to be very close to them. Definitely we have to be close to them because there, as going to your second question, this is how we are perceived. We are perceived as a pure iron ore player. We just saw what happened with the price, how we fell. We fell directly related 100%. But that's why I thought your question was going to be like you're going to make the spinoff, the merge.

This is all about trying to bring attention to a business that is inside Vale that we know--by the way, you know the value that it has. Diversifying itself for other minerals or other companies I don't think makes any sense if we still have the platform inside Vale. What we need to do is extract value from the platform that we do have. Mark was trying to show the growth opportunities in Carajás, what we have uniquely in Canada. We are the greenest, one of the ESG most, and you saw the level of gigafactories that are going to be built in North America. We are the player of choice of course there, so why? What we need to do is finish the homework, make the Canadian mines stable because the rest of the operations are doing very well, and then bring the production back to the levels they should be, prove to people that we have good copper products.

Alemão is taking a little more than we would like to have, but it is coming onstream. Salobo 3 and of course COVID was a problem. But Salobo 3 you saw the pictures. One thing that we know how to do now is projects, so we execute very well. I think we have the diversification inside our house. If you go and ask me back, "Should we stay as an iron ore pure player," if you look at what's happening in Australia, I think it's a pretty dangerous play to do, be in one geography in one mineral. I don't think we should do that. We had that in Vale. We have Canada. We have Indonesia. I think we have the diversification side. We just need to prove to market. That's why sometimes we bring this IPO/carve-out to make people think about that. It's not reasonable to see what happened with competitor A and competitor B when compared with us when the price fell - people just don't see the value that we have inside. That's the biggest homework that we have to do.

I think as we said here in the beginning, transforming the base metals - improving that to the market. It's extremely key and people really absorb that we have a 4-to-5-billion-dollar business inside Vale. That's exactly the work we have to do. Of course, we have to work on cost. Gustavo has a knife in his hand, so we need to get out all the inefficiencies that came out after Brumadinho and COVID. COVID as I mentioned in the beginning

brought a lot of cost to our operations because we took it very seriously. We even stopped, for instance, Voisey's Bay mine in the beginning. We need to bring it back, so we have a very competitive business. Nobody doubts the strength of iron ore when it gets back to where it should be, but still Itabira and Brucutu key mines in Brazil that have to be brought back to operations.

We still have this thing, but if you ask me what the most challenging one is, it's to prove to the system that we are diversified already. Maybe not looking at M&As for sure. How can you trade today? Look at the multiples of Freeport or else, so it doesn't make any sense. Let's just do the homework, get ready, and who knows? That's for the future, not now.

IVAN FADEL|HEAD OF INVESTOR RELATIONS: Just one comment here. We have a good problem because we have many people still on the line. I'm getting the signals, so don't worry I'm putting you on the line. We have right now about six questions on the line, so Timna, I think you're next.

TIMNA TANNERS|WOLFE RESEARCH: Good afternoon. Nice to see everybody. Timna Tanners with Wolfe Research. I just want to probe the concept of being the value over volume swing producer, if you will, versus the obvious benefits of getting to 400 million tons. Very clear that your costs come down, your break-evens come down, but at the same time, you're keeping your volumes low. How long will Vale be patient being the swing producer? When you talk medium term, how should we think about that trajectory and what it takes for Vale to think about resuming production plans to where you want to be ultimately?

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: I'll just be the spoiler for Spinelli. If we had the Torto dam in Brucutu and Itabirucu dam in Itabira, we'll be producing. Of course, we would be very careful in bringing the right volume to the market, but then we are talking about quality. So that would be the case. But of course, we can do other choices because we have several mines. So, in the long term and I think medium term, he's talking '23, '24 because we don't want to be caught in the trap that we said in the past. We're going to be running at a run rate of 400 million tons at the end of 2022. Actually, we are, but the North range and the South range disappointed us. That's why we need to postpone that number. We need to more or less divide what we have in Carajás south and north, and what we have in the southern of Brazil.

I think there is a piece of not being able to bring the volume. Because if you look at that chart--and that's crazy because you can see 20 million tons are going to change the market. Then we can talk about supply and

demand. Because it would be interesting as well. Because we believe that are some misunderstandings of what's going on in the market now. We see the market getting softer until the second quarter for sure. First quarter is going to still until the Olympics soften, but China is not going to produce 900 million tons next year. We don't see a hard landing next year. If the hard landing would happen, it would be now. So, it's a matter of what you are able to do, how you can use that to do. But if you get the sensitivity analysis that Gustavo mentioned, it would be better to do 340. We bet 25 billion and if you're able to keep the price at 100 like it is now today, better even if you get the premiums right. We cannot play that game exactly like that. We are not the masters of the universe, but we know that we can bring actually 80 million tons to the market. Yes. But you are talking two to three years and then we're going to be very disciplined. As the leaders in market, we have to do that very disciplined, and we are going to do it.

Today we are being disciplined by some restrictions and some of our own actions. But in the longer term, that's where this flexibility comes on, and mostly in the North. If you see all the projects that Gustavo mentioned. All of them besides Capanema are in the North. That's where we need to build our capacity and that's where we are struggling to get back to the 230, mainly because of the environmental issues that Spinelli mentioned on the Northern range. I think I already answered.

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: Two examples. As you said, Torto and Itabira, we can add 20 to 30 million tons of pellet feed and pellets. We will probably bring back this to the market despite the value over volume. Definitely there will be market for that, but we need to access this the end of next year. But that's a great product. And the north. That's the third point.

So, the roadmap is clear. If you add the Southeastern part of Brazil with pellet feed, we are producing 30 to 40 million tons of pellets a day. We have capacity of 60. So, there's room to improve that. There is the problem that is missing today. And the Carajás coming on 2023. Long term is 2024, 2025. That's just to keep in your mind the timeline.

IVAN FADEL|HEAD OF INVESTOR RELATIONS: We're getting a lot of questions on the same theme here online. I'll just ask one and I think it's going to be to you, Gustavo. The question is really about our balance sheet since you mentioned in your presentation that some of the obligations that composes--explaining how that will start to come down--how you think about potential leverage long term. And also in conjunction with that, we're getting five, six questions about how you would gauge between also the paying extra



dividends and the potential buyback we have currently.

GUSTAVO PIMENTA | EXECUTIVE VICE PRESIDENT OF FINANCE AND INVESTOR RELATIONS:

First one is as we pay down those obligations, it will open up the space for us to leverage. We don't want to be under-leveraged. I think we've announced and I agree with the recommendation from the team to operate within the one-time net EBITDA. As we pay down Brumadinho and we reduce some of these expenses, the liabilities, we should be able to re-leverage and then think about the best use.

And then going back to the second question, the best use today clearly is the share buyback. Given we are trading--someone mentioned--at three times, it's very acuity for us to buyback our own shares. What we're going to do is the time that we have those cash availables, you will see what the best use it, whatever is more critical for shareholders.

IVAN FADEL|HEAD OF INVESTOR RELATIONS: Thank you.

DANIEL SASSON|ITAÚ BBA: Good afternoon, everyone. Daniel Sasson from Itaú BBA.

Thanks for the presentation. My first question to Gustavo. If you could try to explain coming from another company with fresh eyes, are there any--despite the excellent job Siani has done over the past year--thing that you'd like to tackle first, any opportunities that you see in terms of -- management or things like that? Can you give us a few examples on initiatives that you're working on maybe with your suppliers in order to reach those savings that you mention of nearly \$1 billion over the next 12, 18 months in addition obviously to the high dilution of fixed costs? Maybe can you comment a bit on the extra costs maybe coming from the reblending the high silica products into the BRBF or increasing the usage of filtering plants instead of using traditional tailing dams? That would be great. Thank you.

GUSTAVO PIMENTA | EXECUTIVE VICE PRESIDENT OF FINANCE AND INVESTOR RELATIONS:

Let me maybe get started. The team has done a fabulous job. I'm not saying this because Luciano's here. I think from the liability management standpoint, the balance sheet that I encountered is in great shape. We've paid down that. There's probably some opportunity to accelerate some refinances, but I think this is nittier gritty day to day, nothing transformational. I like the one-time net EBITDA. I like that piece.

If anything, what we want to accelerate is this cost efficiency and the capital allocation discipline. We want to make sure that every dollar makes sense. As we allocate them, they are located at the right level of return, vis-à-vis share buyback. We want to get leaner. That is a priority, not only mine; I think it's a priority for the executive team here. We are all

very focused on getting this done and it's not just because I came that we are announcing this. This had been discussed already internally and if anything, I'm just trying to push a little harder. But we will get there.

In terms of opportunities, we've laid out a couple of levers. I think on the sourcing, we spend more than \$10 billion--I would say probably \$14 billion annually, so we are big buyer among many things. Some of that spend is not addressable, but probably \$10 billion is addressable, things that we buy in the day to day, third-party services and everything. There are several opportunities as you guys have seen many companies doing this, to review specification, scope, even internal demand, how much we are using, optimizing inventory.

We will be tackling a series of those initiatives. They are already underway. Hopefully we'll be able to over time share some of the success cases with you guys.

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: Daniel, thank you. Actually, the new way to operate, we have some--if you see these compartments, you see some increase in terms of Opex, like filtration. That's an extra asset and you need people there. You need to handle the tailings and stockpile. There's a cost involved in that. That part is simple to see that you have something that will increase.

You mentioned the pre-blend. Pre-blend is different from that. Let's take this apart because pre-blend is something to reduce the total cost of the client. It's not something for us, actually. Just figure out. We blend BRBF. Every client in this world blends their own iron ore because they buy it from FMG, buy from Carajás, from Vale. They buy from BHP and they blend. But they do this in their plant or in parts.

When you do this, only one moment you can reduce their cost. So, this action is more intrinsic relationship, something that we are strengthening together, the supply chain as a whole, of something engaging with them. So that's the idea.

But regarding the reduction of cost, optimization of cost, in iron ore we have two main pillars here. The first one is constraint. Let's get out of constraints. There is a lot of work in this area not only related to the challenges after Brumadinho with all the restrictions with dams, but also we can find better ways to solve our problems. Like orebody knowledge. We can improve this despite Brumadinho. Like in Serra Azul, in S11D. There's room to improve that. So, there is up front related to that.

The other part is related to how we can extract value from constructs, from the way we do this. Why you should consider that this would be one of the most important to return the value to the shareholder, considering what happened after Brumadinho, we spent a long time organizing ourselves, to organize safety. We spent a long time organizing our process and now we have an additional effort. Now the focus is discussed. No, we have a platform. We are viewed in doing our homework, like Eduardo said, and now we are increasing other actions, another perspective to deliver your results as a leader inside the company.

That's the right time to do that. It was quite impossible to make this two years ago. It was impossible. We are talking about other real problems.

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: Spinelli, just to add because we had two hits. One hit was Brumadinho. This organized everything and put our actions and you have to do whatever you have to do. Then we created structures, levels of governance that brought a leaner organization. But as we talk, I hear a lot about and I'm truly a believer like Gustavo said, two-time. You know what it means two-time? Two-time is the time that the maintenance people are directly related to the equipment. We are like five times lower than we should be. There's a huge amount of opportunity if you do the right thing with VPS, for instance. That's where we believe the biggest gains are coming. We saw that. We showed it to you I think in 2019, the railway numbers, how the accidents decrease, and the efficiencies come in.

That's why I think when I said 80% is a continuous work, it's continuous improvement by the way we see it. But there are huge gaps of opportunity there. As we have the right structure, there right manning--and the right two-time, for instance. Two times is key for us and we have very, very--how to say? Not the best numbers. Just an example, when you get an equipment, you hire an equipment, people are asking for money and that's I think the contribution from Gustavo, to say no. People just found out that equipment was not being used for the whole time, so why don't you use it when you--it looks like, "Wow," but that's the moment that we're trying to look at, Vale back to the normal. I don't want to say turning the page, nothing like that. We will never forget Brumadinho. Brumadinho will be forever in our minds to remember how things can go wrong. But fundamentally, we believe that we have our leadership now aligned with us. Now it's time to turn this crew and I think there are a lot of things to come out of that. It's not some number we think we're just throwing out because there are cost dilutions that you just mentioned. We know iron ore was always very well run in that sense. Because if you bring better management process for that

with the right behavior, of course we're going to achieve cost for that.

IVAN FADEL|HEAD OF INVESTOR RELATIONS: Let me just organize the line again. We still have four people to ask. I swear I'm getting all the signs and putting it here. JC, you're going to be next and we have Santander, Rafael, and then Bokkenheuser. Then we have Jon Brandt. Then we're not going to be able to get more questions, so respond quickly. Answer quickly.

JON CHRISTIAN EVENSEN|GEOSPHERE CAPITAL: Eduardo, given what you said earlier in the Q&A about wanting to keep base metals, but highlight the value, but also the multiple being treated like a pure iron ore play, Mark did a great job explaining the growth opportunities in the business. But I'm looking at the slide where you talk about going from 45 EBITDA per ton break-even to 35, 30, maybe even below 30 in iron ore. I mean on 400 million tons that's 4 to 5 billion of EBITDA potentially. To get that diversified multiple and get the base metals appreciated by the market, is there a percentage of Vale's EBITDA you're targeting for base metals long term? And how do you get there? Because the iron ore business is massive and the market seems to want a certain percentage of diversification, give you any credit for it.

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: I'll share my answer with Mark. We used to have this number before me. I actually ran base metals, by the way. The way that we were trying to say is it has to be at least 30% of the base metals. But we still think it has to be something around that ballgame. When you look long term at base metals, it's able to go to 6 or 7 billion dollars. We know that. But with the Vale creation, there's a lot of--if we think two-timing in Brazil is bad, you don't know how bad it is in Sudbury. We still need to do this homework in the mines in Sudbury, so there is a huge amount of volume and cost that have to be coming out of the nickel business and growth in copper that we need to bring growth in copper. Like Alemão has to come; Salobo has to come. Everybody wants copper, so it's no big deal. Anyhow, if you have 30% out of 20%, it's going to be 6 to 7 billion dollars. If you get the right multiple, then you can bring.

Because we have two problems here. We have the multiple of Vale that is behind the mining industry. You have the multiple inside Vale that even if it was aligned would be behind because it doesn't dilute the base metals business. And, my vision, we have the whole mining industry downgraded because it's not question D. Because we are essential to everything that we are talking here today and we're trading five times, four times. Why is that? That's not only Vale's problem. That's everybody's problem. That's why I see [break in audio] so vocal and they needed--sorry, being wanted,

not needed like we are today. But on the base metals business, it's in the ballgame I would say 25 or 30, but it has to be relevant. But most importantly, we have to deliver on it. That's I think the main issue around our base metals business.

MARK TRAVERS|EXECUTIVE VICE PRESIDENT OF BASE METALS: I agree. I mean I feel the pressure to put something out there that's meaningful compared to what Spinelli can do.

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: Put it this way. We don't like the idea to be exposed to Brazil to iron ore alone. I don't think this is the best play. That's the way our minds are today. We have been pushed by a Board. We have been questioning. But that's an ongoing discussion that we are going to have. What we know is we have the best assets in nickel and in copper. We need to do that better and that has to be appreciated. So that's why some of the discussions we even provoke, just created a whole, long subsidiary like we did with VLI. Spinelli ran VLI. I don't know if you were acquainted with the VLI. VLI was a railway third-party general cargo business that has only problems, brought only headaches for us. We spun off, gave autonomy, and now it's a 20 billion reais business that almost went IPO this year. If it wasn't for Brazil's problems, it would have been IPO'd. It's not the same because adjacency is not a growth thing. But it's where our minds are. We need to push this business to perform.

MARK TRAVERS|EXECUTIVE VICE PRESIDENT OF BASE METALS: Can I just add something? Obviously in the end the responsibility is to put together a business, like Eduardo was saying, that can generate strong EBITDA, strong cash flow. We have the plans for the 6, 7 billion-dollar EBITDA, multibillion-dollar cash flow, and obviously put the reserves and resources on the table for growth. I mean that's an enviable portfolio for what we're looking at in the future with the energy transition. I mean that's the goal and hopefully it becomes meaningful and seen by the market.

RAFAEL BARCELLOS|SANTANDER: Thanks for the event. Rafael Barcellos, from Santander. Another question related to briquette. Could you please elaborate on your commercial strategy? I mean I know that you showed an incremental EBITDA, so I just was wondering if you're considering a premium over pellet or something in line just to understand exactly what you're considering. My second question is related to base metals. I mean thanks for the details on production, but could you please elaborate on your profitability into next year? Thank you.

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: The position of the briquette is not as a substitute of the pellet. It can be in the future.

We can do this, but we are targeting the sinter to be the substitute. That's the main idea of the commercial part. Yes, we consider premiums come from the briquette. As we mentioned, what will be in the game here? We have some clients that the sinter part of the steel making is the most important part to attack when you want to reduce the two main things: the emissions and also the dust, the pollution related to physical pollution.

We have some constraints. Our clients have some constraints related to renewing the permits or to having new sinterization or new capacity for that. We are targeting who needs to change this to the blast furnace or who needs to now reduce this exposure in sintering. Definitely that is a good premium for that. That's the way we are designing the commercial part. We're going to show this in the future in one year.

MALE VOICE: [off mic] - - .

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: It depends. Actually, can be a premium higher than the pellet or less than the pellet. It depends. But it's different market position. Pellet to blast furnace one thing. Green briquette at the beginning will be driven by the sintered part of the blast furnace.

LUCIANO SIANI PIRES|EXECUTIVE VICE PRESIDENT OF STRATEGY AND BUSINESS TRANSFORMATION: The assumption on the numbers is once you have 50 million tons of briquettes, you're going to generate between 500 and a billion dollars of EBITDA, which means an additional margin let's say of \$15 per ton. If you have a conversion cost for briquettes, around 10. It should be at least maximum half of the conversion costs for pellets. The assumption is an average premium of \$25 over sinter, for example.

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: With a lower OpEx comparing to the pellet. It's half of the pellet, OpEx.

IVAN FADEL|HEAD OF INVESTOR RELATIONS: We have two more questions and then we have to finish.

MARK TRAVERS|EXECUTIVE VICE PRESIDENT OF BASE METALS: Profitability is there. Copper obviously stronger than nickel. Very high EBITDA margins in copper. Strong cash flow. It would be even better if we have Salobo 3 coming on at the beginning of the year, but still very strong. Nickel's EBITDA margins are growing. They're there. They're strong and they're growing. Both businesses are cash flow positive, and I think that's important, in particular with the nickel business, because of the high investments in the replacement capacity in the mine. We've been cash flow positive in nickel

and funding the growth for a couple of years now. There's no shareholder funding or sharing them. Next year is a transition year. Obviously, we have the milestones we have to hit. We'll see that profitability increase, in particular in nickel, as we get the Sudbury mines in shape and producing. I would say that really looking forward to very strong EBITDA margins and profitability in both copper and nickel in a couple of years.

ANDREAS BOKKENHEUSER|UBS: Andreas Bokkenheuser from UBS. I know it's top of the hour, so just one question from me on freight. I know that you obviously have your long-term freight contracts and that limits your exposure to the spot freight market. Most of the fuel costs or the freight cost inflation you've had seems to have been through fuel costs, bunker fuel inflation. How does that work with the new IMO rules? There seems to be a fairly popular opinion forming obviously that the bunker fuel cost component of freight is going to go up because of lower carbon emissions required on the IMO and they were sold for more expensive fuels.

I know from your presentation you expect fuel costs to go down, so how do these long-term contracts you have on freight actually work with the new IMO rules?

MARCELLO SPINELLI|EXECUTIVE VICE PRESIDENT OF IRON ORE: From the IMO perspective, we have three points here today. Specifically for bunker, the low sulfur or for the high sulfur, we address this overall with the scrubbers. Also, the long-term contracts that we don't have the low sulfur as a part of our impact on the business.

But you're right. I think the other two actions from IMO are related to the product consumption, product efficiency and the efficiency itself. So that's two points here in 2023, 2025. From this perspective, if you don't act, you need to reduce this period of the vessel. That's an average what we need to do. The impact for us is almost zero. We only have one part of the fleet, the Valemax, the first generation, that if you don't decrease the consumption, if you don't add this Eco shipping part, we need to reduce 2% of the speed on average. It's really low. It's nothing. So, the impact for this fleet today is something that we are handling.

Considering the future that we need to go to zero, so what we are doing is our new fleet that is coming, and also the fleet that we need to replace, we will be ready for some new solution regarding the few, like LMG or other kind. We're seeing that even the one that I said that we're going to improve--we have some room to improve the fleet--will be ready for several solutions, not only LMG or bunker.

What we can expect, we will be ready to save fuel with the Eco shipping. We will be ready to change of fuel with this kind of specs for the project. But the whole match of what we see today is two main components. The first means that spot freight is really high related to the coal business, so we see the coal going in a better shape in fewer months. Consider normalization of this business with China more balanced now. This is the main impact.

In the bunker, the other thing is related to oil, but what we are doing is trying to offset with savings in terms of projects or being ready for change in the future with our new vessels. That's the way we're going to protect ourselves.

JONATHAN BRANDT|HSBC: Hi. Jon Brandt from HSBC. It's great to see you all again. Just one question from me. Eduardo, you've spoken over the past two or three years about wanting to have a more stable company. Certainly, you've achieved a lot over the past two or three years, but there's still a lot left to go. There are still production starts and stops. There are still lawsuits in Brazil and the U.S. and now there's a new Board election, even though we just had one in April.

I guess I'm wondering what initiatives can you do? When do you think you'll get to become sort of the more stable company that you envisioned? Then just related to that, with the upcoming Board election in the next four or five months, do you expect to follow a similar process with a nomination committee, etc.? Thank you.

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: I think it's a very valid question. I think as you mentioned, we believe we did a lot of strides on that, our business with like EBITDA complex that Medeiros mentioned when you saw the maturity index. It's pretty much more stable. South range is much more stable. Still have issues on the northern range, Canada mines. Although like Long Harbour we operate pretty well. Voisey's Bay is top of the notch in stability. I think those issues are going to be solved.

When I remember my visit to Toyota in 2009, the COO said to me, "I can give you the book, but it takes five years if you do everything very well." It took like that in many ways at Vale, so it's a long-term journey, but we will solve it. It's not rocket science. Its people engaged. It's culture. It's process.

We didn't have an architecture in Vale. We did have the architecture at the railways and ports, but not for the whole system, not even in base metals; we had zero. So that's the main issue that I'm willing to have as a legacy for by the way, because I believe that we have to be leader's proof. The



day I leave, somebody takes my role. It will keep continuing proving this company as it should. It should be a world class company and we will be because I think we are taking the right steps. And it takes time, but it's a never-ending story. That's why I said almost complete the homework because I truly believe that we will be able to deliver on our promises, on our guidance's, and we are going to play the leader role with--how I can say that--with good judgment.

Specifically, about the Board transition, it's a natural one I believe. I don't see any--because if you think what happened in our general election in April, it was shareholders'--how can I say that--decision. It was a vote, so who was there? We lost diversity because we have only one woman there now, but we created shareholder diversity. We don't believe there's going to be assembled next April. What for? Which player is not happy with that? Previ is a big, relevant shareholder at Vale. Other players here are relevant at Vale.

I believe continuity is fundamental to Vale and will happen. Or as my lawyer likes to say, probably will happen. But it's my real gut because I'm getting the full support of the new Board. I don't see any changes coming from that. It's good to see different views and different pushes. People that arrive make a lot of questions, but in the end, we need to be stable. That's what Vale needs, so that's another stability part. But truly I believe it's going to be--I'm not sure it's going to be a nomination committee or it's going to be multiple voting. I really think it can be just renewal of the Board, as can be done by the bylaws by the way. It can even be done by two years. If the bylaws, if the general assembly, if the shareholders wish like that, they can just re-elect the whole team for two years and we leave fewer doubts about that. But I think it's natural. I don't think this is a big issue. From the standpoint of management, we're very well supported by our Board.

JONATHAN BRANDT|HSBC: Great. Thank you.

IVAN FADEL|HEAD OF INVESTOR RELATIONS: I think we have to conclude now. I don't know, Eduardo, if you want to say something.

EDUARDO BARTOLOMEO|CHIEF EXECUTIVE OFFICER: No. I think just thank you a lot for your interest and patience. For the people that were here in person, I really like that. I was going to make a joke in the beginning and Alex didn't allow me. The good thing about the past is that we could do our meetings in pajamas or in Bermudas. Now we need to put a tie. But it's really good to see people face to face and really see that you're really truly still interested in our narrative, in our story.

Just to conclude this, is it a never-ending problem? No. We need to transition to a more stable company as soon as possible. But I don't think there's a best buy in the market and we do--how can I say? We put our money where our mouth is. We are buying ourselves back, so buy Vale. Thanks a lot, guys. Thanks for coming.

[Applause]

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