

BUILDING THE FUTURE STRATEGIC LEADERSHIP IN CRITICAL MINERALS

Kanika Singh 01:32

Good afternoon, everyone. Thank you for joining us for this session. So just to lay the land, the world needs minerals, every single one of them, every single country, from your airports to your smartphones to MRI machines to fighter jets and tomorrow's energy systems. But the world has also realized that the supply risks are very real, and that chokeholds can appear very fast. And this is not an industry where you can turn the supply on when you want it. So we need to reimagine the way we permit, the way we mine, the way we process, refine and use these minerals. What worked in the past is not going to work today and it's not going to work tomorrow. So at the Institute, we've been working at this for two years now. We've been doing programming and research, we've been engaging with stakeholders to identify the challenges, but more importantly, what are the innovative financing and partnership mechanisms that will build secure, resilient and sustainable mineral supply chains? And we published a report with financing recommendations in August, and we think it encapsulates everything that has resonated with stakeholders—a need for greater innovation around the way public capital is deployed, for starters, to de risk and to put guardrails around projects. We need to finance innovation at scale, and we need to engage communities from the very beginning to lower the environmental and social impact of these projects. So this brings me to this afternoon, and I am really excited to have this expert panel with me here. They're going to show how they are leading the way to what mineral supply chains should look like. So I'd like to welcome André, Luciana, Marcelo and Thiago. Thank you for joining us. And I want to start with innovation and technology. Someone said to me, "this is not how your grandfather looked at mining," and that's true. This is the future, and I'm really proud to have you all up here to share how this growing group of upstream and midstream producers and players are determined to change the way the narrative around mining. So Thiago, if you could kick it off for us—you're a top 10 company in the sector. You had your market share. You didn't need to, but you're taking a new path for sustainability and community. Why and how?

Thiago Toscano 03:48

That's nice. Thanks a lot, Kanika, it's a pleasure to be here. In our case, we do that because we really believe that add values, both to the company and for the society, for the community as a whole. And it's very easy to explain and show some examples of what we did. Itaminas is a 67 year old company, and it went on acquisition last year when I stepped in for the first time. And on the second week I was there, I just got a letter from the Justice—a welcome letter, I say—saying that I should close Itaminas for not accomplishing some environmental obligations. So it was very welcome starting like that. But the thing is that Itaminas was going through its environmental license. I remember that André Esteves during his panel, he mentioned that licensing for habitation, for example, here in housing, here—one year, it takes one year. Itaminas was revalidating its license—it's not a new license—for the past eight years. In mining it costs a lot, and there's not only the cost of capital, but when you're going to take your money back from the investment. So when we stepped in, we start

changing everything with our environmental and social agenda. And in seven months, we could have the environmental license. So that adds a lot of value for us, also for the society, for accomplishing those goals. I think the most remarkable thing that we have is that we are just on the other side of Córrego do Feijão, where we have the dam break in 2019—the tailing dam collapsed and killed 270 people there. And when we first had a meeting with the victims association, telling them that we would assume a mining just in the surrounds there, the meeting starts like that—the President of the victims association, he showed his cell phone and said this: "Priscilla, my daughter, she worked for for the company for the past 10 years. I called the authorities for 20 days in a row to have some information of my family, and in the 20th day, they call me there, and they delivered my daughter in a box with a leg, an arm in the chest, and I never found her head. So I'm very happy for you to come in back here and say that you're going to have your operations back." So we start talking with the other communities—and it was in February that happened—in July, we started operations, the new operations. And in September, he asked us, and her daughter started working with us, and she called me, said, "I would like her to to work with you, because you do differently, and I lost my daughter on one side of the mine, and I'm giving another daughter for you to take care of." So how, how does it add value to the [inaudible]? Because if they were kind of fighting against we probably haven't started yet, and we will be losing money. So that adds value for us and adds values for them, because they have more jobs, for example, the ways are higher, things like that. So that really adds value. In fact, it's not a matter if I like ESG or not. It just adds values.

Kanika Singh 07:16

Marcelo—Sigma Lithium has been recognized for environmentally sustainable production. Run us through what motivated this and what are some key factors, if you could list, that you think helped get Sigma Lithium to where it is today.

Marcelo Paiva 07:30

Sure. So first of all, Kanika and Milken Institute—thank you very much for the invitation. It's always a pleasure to be with you. So we deployed long term capital into the sector back in 2016—that was right after we had a very sad environmental disaster in Brazil. So back then, we wanted to demonstrate that sustainability, social impact and cost leadership can coexist. There is no miracle. It does require higher capital investment at a time when capital is scarce, and it also requires higher ongoing expenses. So there is no shortcut. But still, we proved, you know, like our company became operational in 2023, and I'm very happy to say that, like, it's been recognized, like worldwide—you know, like as an example, in sustainability, in social impact. And I'm also very happy that, like, we believe that we've been helping a little bit Brazil to showcase what it's possible to get done here in Brazil, right. When you when you mention, you know, like, how—like, what are the main factors that put us in this position? So the first one, I would say, is the innovation that we put in place in our—in what you call our Greentech Industrial Plant. Once again, it does require, like, a higher capital investments, right? But it put us in position to run an operation that is within one of the lowest cost operations in the whole world. As some examples of innovation that we put in place, that industrial plant does not have any tailing dams. We don't use any hazardous chemicals. We don't use potable waters. It's a zero waste operation. Secondly, I want to highlight the fact that the operation is in Brazil. It helps tremendously to be in Brazil, and why is that? First of all, Brazil have an established mining jurisdiction. You have rule of law. Third, you know, like cerca 90% of our energy matrix is renewables. You know, our Greentech plan is green tech among several factors. One of them is that it's powered by renewable energy, right? And lastly, you know, like it has old infrastructure in place that is needed, like a much better infrastructure than in several other jurisdictions, you know? And I would say that this was the key ingredients.

Kanika Singh 10:11

Thank you. So I want to pick up on something you said—made in Brazil. André—China's low cost practices have dominated the nickel markets. You are applying a key technology here in Brazil. Share with us how game changing that could be.

André Simão 10:53

Thank you for having me here. It's a pleasure to be here. I think today, what we're trying to do with nickel, it hasn't been done before at that scale. We are applying a very old technique, which is heap leaching, which is common in gold—it's common in copper, to nickel—and that's very low cost from an energy perspective and also from a carbon perspective—it's very lower—which is in a complete different from what the supply chain in China and Indonesia looks like, right? So that's the first point. We're trying to diversify the supply chain by proposing something strategically different, which is, let's produce nickel at a competitive cost, but being very responsible from an ESG perspective—low carbon, and working with the community. So that's how we are positioning strategically our business, and that's how I think we are diversifying away from what's happening today in southeast Asia.

Kanika Singh 12:07

Thank you. So one of the things that's come across even in this conversation so far is high cost, excessive price volatility in the commodity markets, but yet the need to stay responsible and how you're continuing to pursue the innovation to lower your environmental and social impact and work with communities. Which brings me to the financing side. So Luciana—can you share with us in the room where we are on the critical minerals fund, and how you see engagement, whether it's BNDES or your partners, in financing this journey that will help position Brazil in what is a very strategic position right now in the global race for minerals.

Luciana Costa 12:52

Can you hear me? Good afternoon, ladies and gentlemen. And Kanika—[inaudible]

Kanika Singh 13:37

Okay, we'll get that fixed. We'll get that fixed in a minute. We'll come back while they fix that. Hold that thought. Thank you. Let's continue with this, because we don't have much time, and I want to make sure we talk about how international capital and—I want to talk about dampening the volatility, and in an industry where we need more patient capital, given an average mine takes north of a decade to come online—how are you seeing—this is no longer also a private sector solution. Governments from all over the world are getting involved. They don't have the minerals. So I'd like to turn to you guys and ask you guys, how are you seeing international cross border efforts? What form is public capital taking, and how are your companies fitting in? If I could start with you André.

André Simão 14:31

As André said earlier today, we're moving from a multilateral world to more national markets, and that's forced most of the governments to step in and try to rebuild their supply chains in accordance with their national interest, right? And that's where the governments play a pivotal role in securing that those projects—especially our projects in the critical minerals—get developed. So what we see today in our project is that several governments from the Western world—including BNDES, including the Brazilian government—are trying as much as they can to support a project, either through project finance or even through equity, when they find a mechanism that works with their regulatory framework. I think the challenge today are two. One is the long term nature of the investment—they need to be patient. And second is the regulatory framework, where it needs to be adapted to this new reality—geopolitical reality—where they now need to deal

with supply chain, which wasn't a problem before. So I think those challenges are being addressed to a certain length, by different governments at different speeds, but they're doing something—that's what's important.

Kanika Singh 16:04

Right. And using ESG as an asset class, almost—for all of you. Thiago, can you talk to that? I know you have some thoughts on how industry should be positioned.

Thiago Toscano 16:13

Yeah, sure. I think so. I think both on ESG and also, in addition— André just said on the previous panel here—Isabelle from Barclays mentioned that they don't fund food and ag. They fund food security and price stability. So we need—from our standpoint, from the company standpoint—that we are playing a game—a global game or a regional game, as Marcello mentioned in the national level, for example, for us—we were reached out by Mubadala and also from Saudi PIF, because our strategy is related to the decarbonization agenda, which brings the sustainability in a global way. But also, as the steel industry is moving to Europe, due to sea bands in Europe especially, and they are looking for a net zero steel or a green steel, and they need ore—and even for the energy transition, they also need ore. And we need to know that we are not only—it's not only our business and looking for funding that the banks give you money, then you pay it back or the investor—but also talking to those sovereign funds, example, helps to address the volatility, because they are not looking just for the business itself, but as the supply chain as a whole. So even when you have the volatility, if you are adding value to the supply chain—in their words, say, your project really adds value to the country, so we'd like to support you on equity and on funding. And I remember telling them that I don't want equity of funding, I want to partner—because if you don't have the equity for me, as a partner, we can open dialogue with any financial institutions. So the country and the funders—if you're not a sovereign fund, but like BNDES or even DFC—they need to look as those sovereign funds in terms of the value chain. And we here, as the sea level of the company, or even the owners of the shareholders, whatever it is—we need to look like we are playing this global game, and how we add value on that. If we connect that, then we can discuss volatility, the risks, the funding long run.

Kanika Singh 16:14

That's an excellent way to [inaudible]—Marcelo, we talked about the global hunt for minerals, and run us through how your company is managing the short term versus long term capital—working capital—to keep on the green projects versus the off take agreements.

Marcelo Paiva 16:52

Sure. Okay, so to start with, I think I'm the best position to talk about volatility. You know, like our sector has been marked by cycles—by like two to three cycles—where prices have gone up to circa 20 times, to prices going down up to 90% right? So, tell me about volatility. Firstly, like it helps, obviously, that our company has been backed by long term capital since day one. Second, I would highlight that we don't lower our standards—and this is an issue in some parts of the world, and this is something that we reject completely. And third, it's essential to be low cost when you run such a—when you are in such a volatile sector, right? So I would say that when you combine the fact of being low cost, plus, in addition to that, like traceability, and sustainability, and the fact that you are in Brazil—you know we're like in a weird trade with the whole world—that puts us in a position where we are the partner of choice, of end users worldwide—in the East, in the West, in the Middle East, right? And therefore, such end users, they want to work with such reliable suppliers. So, in our case,

something that we've been doing recently is that we've been replacing our working capital financing—from banks, from financial institutions—to our clients. And then additional benefit for us is that one, we get even closer to those clients, and we get a lower cost of funding than we would have otherwise, if we're still dealing with banks.

Kanika Singh 21:05

That's very helpful. Luciana, I think your mic's working now.

Luciana Costa 21:08

Hello, can you hear me?

Kanika Singh 21:09

Yes.

Luciana Costa 21:10

Yay okay [laughter]

Kanika Singh 21:14

The floor is yours.

Luciana Costa 21:14

Good afternoon, ladies and gentlemen. I would like to thank Kanika and Milken Institute, greet my colleagues, and it's a pleasure to be here. When it comes to financing, or capital raising on the equity side, I agree that this industry, the mining industry, is very specific. BNDES has a deep knowledge of project finance in infrastructure and energy, and we are putting in place mechanisms to also support the mining industry. One innovation that the bank has done is the critical mineral fund, where BNDES is putting 25%, VALE's putting 25%, we hire GPs to raise the remaining—so it's going to be a billion high fund to support midsize companies in early stage, because for those guys—for those specific segment, and in this stage—we need equity. There is no financing space for that. When it comes to project finance, the mining industry carries specific risks that have been appointed here, which is related to volatility—price volatility—and also the companies they must be low cost—in which point of the cash cost curve those companies are placed because, indeed, critical minerals are very volatile. But this is the challenge that we have to address—but on the other hand, Brazil, depending on which statistics we see—alongside with China, Australia, Canada—Brazil is very well positioned in terms of reserves. We have pretty much—depending on which source we look—10% of the critical mineral reserves, and we export less than 1% of that. So there is huge room to grow. We have critical minerals, and we have cheap renewable energy to process those critical minerals, like Marcelo just mentioned. We have a tradition. We have a mining industry which is secular. We have best practices. The companies here are an example of that, because we do mining with social responsibility and because of our renewable

matrix, we also are very low carbon. So I think that the critical mineral fund is just the first instrument that we are putting in place, but a lot of innovation will come in the near future.

Luciana Costa 24:18

Can I add something on the volatility?

Kanika Singh 24:19

Yes, please.

André Simão 24:21

I think the key to—one of the key pillars of dealing with that volatility is innovation, right? We need—and we are doing this—we're moving from an old technology in terms of how we explore the mines, into trying new ways to do it, and that's how I think we're positioning ourselves at Brazilian Nickel. When we move away from [inaudible], and we're trying something new, which is heap leaching at atmospheric pressure, we are trying to do that, of course, for ESG reasons, but also from volatility perspective, because that puts our direct cash costs at around the first quartile—around \$7,000 per ton. There's, of course, there are challenges. It's innovation, it's new technology, but I think we as miners, we should always reflect—not only try to solve the volatility problem within the market itself, but within the company, and that's done through innovation. That's—I think it's the thing that the mining sector is trying to deal with to a certain extent.

Luciana Costa 25:34

Let's innovate on contract. I mean, we need to work better on prepayment agreements and off take agreements. Like Marcelo is saying—sometimes prepayment agreements—prepayment instruments are great instruments to finance. Innovate on off take agreements is also important. This new word is inten—the low carbon—the carb—the word which is neutral in carbon, is intensive in materials. So—and we need to innovate on contracts and financial instruments.

André Simão 25:58

Correct, perfect

Kanika Singh 26:01

Can I ask on this—on innovating right? So innovations in mining, they reduce exploration costs, they reduce exploration time, they reduce worker safety risks. They can improve yields downstream. So sometimes you hear this frustration that things like AI have gotten adopted so fast in other sectors and—but yet, there's, you know—in mining, it's coming from large names—there's concerns that they take innovation on board, to your point, André—even one slight hiccup can cost millions of dollars, right? So, but having said that, all three of you are continuing to pursue innovations. I'm very curious—in this now global world where there are countries that really need these minerals, that want to maybe fund you, and do not want to get involved when they wake up in the morning and see a bad headline right on an environmental risk. So that has

to be a huge pitch for you as well. And I'm just curious on how the persistent efforts that all three of you are making in pursuing innovation and social sustainability, how is that getting traction overseas? Are you finding certain sec—certain countries are more receptive to it? Are they seeking you out? What is the form of financing? What does the new international capital landscape look like to all three of you? Maybe André if you could start and go to Thiago and then Marcelo.

André Simão 27:23

For us, it's—it has been welcomed by the Western world, mostly, I think Europe, through France and through German mainly—have pushed initiatives through the private sector, via the government, and we have memorandums and MOUs with one German company, which is Pure Battery Technologies, and one which is a French company called M, where they're securing off take. We have the problem with the price still, but they're securing volume—and on terms that we are not used to—10 years plus—which is something that's not very common in this market, right? And you see that there's a movement, and there are refineries. They're taking our product, which is midstream, and make it downstream. So you see that there's not nothing common, but we are not living in common times, right? Things are changing or changing fast. So the western world is trying to find itself ways to do it. The American—the Americas—most Canada and the US—also put LOIs for us to do the project finance. DFC with \$500 million. EDC with 275—and this is public, so I'm not saying anything here that's confidential. So the everyone is trying to find a way to secure the supply chain upstream and downstream. So I think that's very good news for the Western world and for us critical minerals as a project.

Thiago Toscano 29:02

I agree. I think there is a very huge gap in information, a very high symmetry of information in mining, because we see like mineral projects, and people come—probably come to Marcelo all the time, and André I'm pretty sure—Marcelo [inaudible] come to us and said, "I have a huge, a nice project, have done the drilling campaign. It has ore with high grade. You want to invest on that?" And we try to be as transparent as possible when we reach financial institutions. In our case, you have a KFW, likewise, just talking about sustainability, and try to get lower interest rate and being transparent, because they don't—they simply don't know what happens, for example, in railroads—that was also mentioned before—projects that come to us and say, it's not a good project because there is traditional communities there—they haven't been heard under the Brazilian law, which is not regulated—and it's not going to work in the—it's not going to run in the medium term, not in the long run. And being transparent with them adds value to us likewise, because, say—don't do that—for example, in our case, Itaminas, we don't suggest you make partnership or trying to sell some stakes, because even though we, we are transparent, we accomplish all the environmental obligations—you don't know what's going to happen in the future, and we don't want—we want to keep our reputation. So we are always trying to fundraise, but keeping the funds, the investors safe as well, in a structure of the funding that they can be secure and reduce their risks and that can turn into lower interest rates or lower spreads.

Marcelo Paiva 31:00

Well, on our case, we've been transacting with actors and players all over the world, you know. I would say that, you know, like a next step where we can all improve is that—is, if we have, you know, a more established traceability framework, which is aligned with the OECD and the EU battery passport for critical materials. Okay. I think this is like the next step that we make for producers, like in Brazil—even easier to show, like, our standards, compared to other parts of the world.

Kanika Singh 31:44

Luciana—yeah—speaking of something that Marcelo said, right—there is a fiscal constraint on Brazil, right? But to your point, you've talked about—you were talking earlier today—you talked about all—there are potential paths that Brazil could go down on financing and providing greater support. So would love to hear from you.

Luciana Costa 32:04

One experience—talking about, yes, there is fiscal constraint in our country—but Brazil, we—BNDES manages the Climate Fund, and Climate Fund is a catalytic debt for energy transition and carbon. And critical minerals are eligible for the Climate Fund. One thing that could add to this—to innovation—when it comes to financing this critical mineral—the mining industry—would be, for example, a guarantee fund to support those companies to access Climate Fund. But if we are to create a guarantee fund, we would need fiscal budget for that, and we don't have. One thing that we could suggest is a cooperation with multilaterals, and in the US, in Europe—because we have the catalytic debt through Climate Fund. We have companies willing to access that fund. Maybe we could figure out a guarantee fund with other multilaterals to support those initiatives. So this could be a path to pursue, in my opinion.

Kanika Singh 32:06

Incredible. I love that. So you know, something that we've seen coming out of the United States is the concept of how important public announcements can be as a signaling effect—whether it's putting a price floor on a mineral or whether it's providing an off take agreement, right? So something along—

Luciana Costa 33:11

Yes, like I think those are also paths to pursue, because mining finance is different from project finance of infrastructure. I mean, project finance of infrastructure—I mean, we are talking about concessions. We are talking about a lower risk. We don't have this price volatility risk. So those are separate topics. But that's why, when it—I mean off take agreements are very important. And I think that as the trade increase in the western—as the more the US and Europe—they need critical minerals for Brazil—I think that the private sector will move to improve those off take agreements. And when it comes to off take agreements, devils lies on the details—so those those off take agreements could really be used to unlock project finance structures. Prepayment facilities are also a way to pursue cooperation between BNDES and multilaterals is also a way to pursue. At BNDES, we also are the Secretariat of the Brazilian country platform, and critical minerals is a vertical of that that country platforms, and the country platform, it's the right environment to unlock more innovation on the financial side and reduce risk along the value chain. So I see a lot of opportunities. There is risk, there are challenges there. But as we follow President Lula, he is really aware of the critical minerals opportunities that Brazil carries, and he's also aware that we have cheap renewable energy. So it's a way also for Brazil to go further in the value chain. And instead of just exporting pure commodity, we can integrate the supply chain more in Brazil, depending on the way we we position ourselves. And I think there is a win-win between Brazil-Europe, Brazil-the US. So I'm optimistic about the future of this industry. The minister of energy and mining, they recreate the Council of Mineral Policy, which is a sign of that the country is also willing to put an effort to improve the regulatory frameworks on mineral, because this new world will require private money, but with public money and public policy driving investments to where investments needs to go and reducing risks.

Kanika Singh 36:55

Well said. We have under four minutes left, so I would like to turn to my other three speakers—closing remarks. One thing you want to leave the room with. Thiago, we'll start with you.

Thiago Toscano 37:05

The mining sector created a very bad reputation the recent year—especially because of the tailing dam breaks—but also because when you look from above, if you get Google map, you see some [inaudible], but you don't take in consideration that other preserved area is preserved by mining companies. So mining preserves 10 times the area that they explore. There in Minas Gerais—some places where you have mining—the GDP per capita is twice as cities with no mining company. So mining is good. Everything here in this place in the world was planted or mined. So we have to change the way people see mining. The development depends on mining. So it's also important for us to play this international role, but also looked for sustainability. But it's very important for us to take the storytelling for us and starting saying that producing nickel is important for the developer [inaudible]—the lithium as well—iron ore, rare earths, everything. So we must change that. People must understand there is no life without mining.

Kanika Singh 38:23

André.

André Simão 38:25

I would say that this current world that we live in cannot live without critical minerals. On the other hand, we have a responsibility to make and to do things different from what our old mining would to do. So sustainability is non negotiable. And at last, I think the Brazilian government is doing what it can, and there is this strategically communal policy that's in Congress now to be approved, which will push the regulatory framework. So I think we have everything—We have the right momentum coming together for us to unleash the potential of this country, not only our iron ore, which is established, but in to create [inaudible] and having a more protagonist role in the world, in that sense—in this renewable energy—in this changing world—towards a more greener and sustainable environment.

Kanika Singh 39:20

Marcelo, you have the last two minutes.

Marcelo Paiva 39:21

Yeah. There is no energy transition without critical minerals. Full stop. And I am 100% sure that Brazil has an historic opportunity to become the world's most trusted sustainable, low carbon supplier of battery materials. Full stop.

Luciana Costa 39:44

This is a country of rule of law, a lot of natural resources, low cost, renewable energy, and also we have infrastructure, and we are improving the infrastructure. I mean, Brazil has a huge investment flowing into roads—toll roads. We are trying to put in place regulatory frameworks for railway because critical minerals is also about infrastructure. So I think there is huge challenges ahead, but Europe and the Western can do cooperate with the country, because here we are a country where investors really trust on the rule of law.

Amazing. So before we close—first of all, thank you for joining us for this, and thank you to my amazing speakers, and we will be continuing the conversation on critical minerals at our Middle East and Africa Summit in Abu Dhabi. We hope to have the CEOs of DFC and Maaden and Orion on stage. So if you're around, join us for that—but otherwise, thank you so much for sharing the new world of mining. [applause] Thank you.

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