

Good Things Happen - [S5, EP 5 Hard to Abate](#)

S5, EP5 - Hard to Abate

Guests:

Liz Curmi,	Global Thematic Analyst, Citi Global Insights
Irina Gorbounova,	Vice President M&A and Head of XCarb Innovation Fund, ArcelorMittal

Alex Miller (00:01):

Hi, I am Alex Miller and welcome to Good Things Happen, the show that invites change makers and enablers to share their inspiring stories of progress. Whilst change can of course be uncomfortable, unexpected, and at times disruptive, it's inevitable. And more often than not, change will be for good. We'll be hearing from people from all walks of life who've been at the forefront of change, including their journeys together and their motivations. Because ultimately, as we know, when people work together for a common cause, good things happen.

Irina Gorbounova (00:35):

I'm a big fan of circularity and one of the credentials of steel is steel is infinitely recyclable.

Liz Curmi (00:41):

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Alex Miller (00:56):

So as the world progresses to net-zero, the focus is often on how to cut emissions from cars and powers. But what about the places where emissions are difficult to reduce, or as we say abate? Some businesses have a harder time reducing their emissions. These so-called hard-to-abate industries form a large part of our global emissions and reducing them is the key to a greener future. I'm delighted that we're joined here today by Irina Gorbounova from ArcelorMittal, one of the world's leading steel companies and Liz Curmi who heads the energy transition efforts at Citi Global Insights. We're going to talk about the path these sectors are taking, which are the bedrocks of our global economy and the fundamental to a successful energy transition, how they're forging ahead on their journey to decarbonize. On the way, we'll take you into a deep dive into the steel industry and discuss the opportunities and challenges that the industry is facing in decarbonizing. With that, let me turn to you first, Liz. You've published an update to your series on hard-to-abate sectors. So what does hard-to-abate really mean and what's so pressing that we need to focus on these sectors?

Liz Curmi (01:57):

So thank you Alex. So we published a report about three months ago and let's just start explaining what hard-to-abate sectors actually means. So there's sectors that are extremely difficult to reduce emissions either because technology is not get there or not economically feasible, and they have a lot of investment needed to decarbonize them. So the report covers a number of sectors. It covers aviation, shipping, steel, cement, and aluminium. And it talks about the journey that these sectors have in decarbonizing. It's not the first report that we wrote. We wrote something about three years ago, and in that report we talked about the cost premiums to decarbonize these sectors that were really high and are still really high. And we thought decarbonization will start to happen in the 2030s, but we were mistaken. Spurred by legislation, carbon pricing, government support, we are now seeing these sectors start to decarbonize.

Alex Miller (02:55):

So tell me, Irina, think about the steel sector. How do you think about sustainability in that context?

Irina Gorbounova (03:00):

Thank you, Alex. The steel industry is one of the largest industrial contributors to global CO₂ emissions and the traditional route of making steel through blast furnace emits close to 2.3 tonne of CO₂ produced per tonne of steel. Sustainability here means reducing this carbon emissions by improving energy efficiency, utilising low carbon technologies and improving the circular economy. And I'm a big fan of circularity and one of the credentials of steel is, steel is infinitely recyclable. Sustainability is clearly one of the fastest growing priorities for businesses across the industry, which increases pressure on existing market leaders and has brought about a growing number of new and emerging technologies that we're trying to identify and see how we can invest and support some of those technologies in order to accelerate our journey to net-zero.

Alex Miller (03:54):

I was going to say, I imagine there's quite a few opportunities within that transition as well as significant challenges. Are there particular opportunities that you'd highlight?

Irina Gorbounova (04:03):

And I like how you frame it, Alex, because indeed everyone's talking about challenges, but I think it's great to actually frame it as an opportunity. And sustainability presents significant opportunities for the steel industry, particularly in driving innovation and ensuring long-term competitiveness in the world increasingly focused on decarbonization. Firstly, there is an obvious potential to significantly reduce carbon emissions and play a pivotal role in addressing global climate change. Secondly, sustainability opens doors to new markets and investments. And what I mean by that is as corporations set ambitious net-zero targets, there is a growing demand for low carbon materials. Steel is a fundamental building block of infrastructure and therefore must evolve to meet those demands, creating a challenge, but an opportunity to offer premium green steel products. And of course there is also opportunities for cross-industry collaboration for new partnerships to accelerate the ramp up of low carbon technologies and solutions, improve knowledge sharing and practises.

Alex Miller (05:13):

So we're going to see a lot of change I guess over the next decade. If you've wind forward a decade or so, what do you think will be most different? Is it going to be new products? Is it going to be a new way of doing business?

Irina Gorbounova (05:23):

Look, if you think about steel, and again, taking it... Framing it positively, we must focus on credentials of steel is such a versatile and infinitely recyclable material. And it's absolutely fundamental for the energy transition. So it's how we produce steel, that's what we need to focus on. Because we require it for everything related to the energy transition, be it electrical vehicles, be it renewable energy, nuclear energy and data centres. You require a lot, lot of steel, but it's how do you produce it in the most sustainable and in the most durable, in the most low carbon way. I think that's what going to be the focus.

Alex Miller (06:03):

So presumably innovation is going to be a huge part of this journey, and I know you're involved with XCarb. Perhaps you could explain to us a little bit about XCarb, how its own innovation journey has begun.

Irina Gorbounova (06:14):

XCarb Innovation Fund is effectively designed to support and identify and invest in some of the most disruptive breakthrough technologies that can help us accelerate our journey to net-zero. So it's really about technologies that can help us reduce the CO₂ emissions per tonne of steel produced and in our production. I'll give you a couple of examples because we do invest across the steel making value chain,

Good Things Happen - S5, EP 5 Hard to Abate

we do want to ensure that some of the technological pathways, really the most disruptive in terms of reduction of usage of fossil fuel. So for instance, we invested in a company which is pioneering the molten oxide electrolysis of iron ore and it's done in a single process and the byproduct there is oxygen. So that's really reducing your carbon intensity and dependence on fossil fuel.

Alex Miller (07:08):

That's fascinating. So a lot of innovation happening at XCarb. Liz, what are you seeing in terms of innovation areas that particularly seem to excite?

Liz Curmi (07:15):

I mean, there's so much. So many innovations that are happening in these sectors. I mean, steel is just one example, but let's look at cement, which is extremely difficult to decarbonize because not only do they have to change the way they use fossil fuels, they also have process emissions which is just there from a chemical reaction for the production of cement. So what's really happening there is you have novel cements coming out. These are small companies that are actually coming there and changing the way you produce cement, and they're growing really substantially over the years. And give you an example, there's a clinker production of cement, which is responsible for 88% of cement emissions.

Alex Miller (07:52):

So that's the conventional way of making it?

Liz Curmi (07:53):

Conventional way. And now you can actually reduce those emissions immensely by changing the materials to make the clinker or actually changing that process completely.

Alex Miller (08:05):

And ballpark, is that sort of by a quarter or a third, more than that even?

Liz Curmi (08:05):

You can reduce it really substantially, you can reduce at least the process emissions, which are responsible for about half of those 88%. So that's one example. I mean, I'm really exciting from the energy perspective, is that nucleus coming up again in the front light. It was pretty much muted before and there's something called small medium modular reactors. Thank you for the name.

Alex Miller (08:25):

SMRs, aren't they?

Liz Curmi (08:25):

SMRs.

Alex Miller (08:26):

Why has nuclear particularly come back to the fore? It's not like the technology itself is new or is SMR the innovation that makes it so much more relevant?

Liz Curmi (08:34):

There's no SMRs that are actually in operation today. They're mostly in development. There are 80 in development today and they're all being tested. They're big commercial in 2030, 2035 that actually come out and actually be really operational. What's really cool about them is they're completely modular in a system. You can build them anywhere. So you can take all the parts together, put them out in a shipyard-

Alex Miller (08:54):

And they're relatively smaller, aren't they? Compared to-

Liz Curmi (08:56):

Much smaller, less capital intensive, have that intimacy problems that renewables are. And remember, renewables are always still much important and they have to be scaled up as well in parallel to nuclear. But they could be used for industry as well.

Alex Miller (09:10):

And we're hearing lots of news for out the US about big tech companies saying that-

Good Things Happen - S5, EP 5 Hard to Abate

Liz Curmi (09:14):

Yeah, buying-

Alex Miller (09:14):

They're going to secure their own energy through this as AI proliferates and data usage proliferates.

Liz Curmi (09:20):

So they will actually start investing in SMRs first and you're going to see the price come down hopefully. And then they'll actually be used for industry, for example, you can actually transport that nuclear to exactly where that industrial site is and they can get power and heat from there. So it's a fantastic new... Not new technology, but one that's in development.

Alex Miller (09:37):

And presumably the tone of the regulatory debate, the tone politically has evolved.

Liz Curmi (09:42):

Yes, completely. And today there was news that the European Union Parliament is now actually opening up and looking at nuclear much more seriously.

Alex Miller (09:49):

So it's really in parallel with that broader energy transition.

Liz Curmi (09:51):

Correct.

Irina Gorbounova (09:52):

It was a tripling of nuclear energy initiative, right, coming out of it-

Liz Curmi (09:56):

Yes. It got signed out in New York. Which is absolutely fantastic. I mean, there is a kind of understanding in the industry now that we need all the tools to decarbonize and also to decarbonize hard-to-abate sectors that are responsible for 30% of emissions today and are the backbone of our economy. We can't do anything without steel, cement, aluminium. We can't transport our goods without shipping. So we really need to move into decarbonizer sectors as well.

Irina Gorbounova (10:30):

Maybe to add from the steel making perspective to what you said Liz, because it's indeed we do need a lot of clean energy and renewable energy, given its intermittent nature. We need energy 24/7, so we can't just rely on it when the sun shines and the wind blows. And that's the reason one of the investments we make-

Alex Miller (10:49):

And that's that so-called intermittency, the risk that it's good when it's there, but when it's not there, what do you do?

Irina Gorbounova (10:53):

Exactly. And I think there are two things. One, from our perspective, we also invested in a multi-day energy storage. So because energy storage is going to be a name of the game when it comes to the renewable energy, but then-

Alex Miller (11:05):

So that's capturing that renewable energy and then we have storage until it's needed.

Irina Gorbounova (11:09):

Yes. And storing, we're talking about for instance company called Form Energy. They plan to store it in 100-plus hours, so it's long duration. And when we say loan, it's really multi-day storage.

Alex Miller (11:18):

And are there breakthroughs being made in that energy storage space that make it particularly relevant today?

Irina Gorbounova (11:24):

Good Things Happen - S5, EP 5 Hard to Abate

Well, I think one of the companies that we invested, we do think that they're developing a breakthrough technology based on iron ore that provides the low cost and low duration energy storage. And then of course in addition to that, I was mentioning nuclear. So our investment in advanced nuclear company. I think we need to think about energy mix, right? It's not just going to be one magic wand that's going to help us.

Liz Curmi (11:47):

In any solution that you look at, if you look at all the hard-to-abate sectors, whether that's steel and aluminium, cement, aviation, shipping, none of the sectors are just... Except for aviation, are really focusing on just one solution. They're actually investing in multiple. And I think that really needs to happen because it's so complicated to reach net-zero, that you need multiple different solutions to come together. And then maybe there will be potentially one that will take it off, but at the moment there's an investment in all.

Alex Miller (12:14):

And do you think that's been encouraged in part by a growing maturity on the regulatory level that all avenues need to be explored?

Liz Curmi (12:21):

I think governments have stepped up compared to where they were three years ago. Governments in advanced economies, let's define that, they've stepped up in government support. So three years ago you barely saw any government support. You saw legislation coming in, you saw carbon pricing coming in. And now with the Inflation Reduction Act that came from the US, it's actually pushing other countries to think, okay, I have this journey to decarbonize, how am I going to put my economy in there to ensure-

Alex Miller (12:45):

And that really was a game changing piece of legislation-

Liz Curmi (12:46):

That is a completely game changing-

Alex Miller (12:47):

Bypassing support.

Liz Curmi (12:47):

You've seen tax credit has come out in Australia. You're seeing Germany come out with kind of CCF fees that are actually trying to make sure that the industry decarbonizing and provide them support because all these industries have tight margins and need the government support to decarbonize.

Alex Miller (13:04):

And is that legislation we saw out the US back a couple of years now?

Liz Curmi (13:07):

The Inflation Reduction Act.

Alex Miller (13:09):

IRA Act. Has that spurred other regions to respond because presumably their companies are looking at the US and seeing that as a more competitive market to go to with subsidies?

Irina Gorbounova (13:18):

It did. Absolutely. Again, there is this cliché comparison of green deal in Europe and-

Irina Gorbounova (13:24):

One being a stick, another one is being a carrot. No, but Alex, there is definitely a willingness from the government to provide some of those levers to accelerate the net-zero efforts of the organisations and corporations.

Alex Miller (13:37):

Fantastic. So I know one of the things you've been doing a lot of Liz, is having conversations with governments around the financing of this and how corporations themselves need to ultimately put this into play. What are you hearing in terms of best practises or the paths people are going down?

Good Things Happen - [S5, EP 5 Hard to Abate](#)

Liz Curmi (13:51):

So when we looked at financing, what we found is cash-rich companies, so really are doing it themselves with a bit of government support. Others are lending on their balance sheet. And if you look at, for example, capital debt markets like sustainable bond issuance, about 80 billion over the last five years since we wrote that report was done by hard-to-abate sectors. So they actually use the debt market to actually raise some financing. What we're also seeing is project finance play an important role. So one project that comes up is H2 Green Steel, which actually use project finance as a way to finance the projects. And the off-takers of the green steel where car manufacturers or things like kitchen utensils and kitchen equipment companies that are going to take that green steel off, but they're also equity investors as well. So project finance is an interesting tool and it will grow and actually also be extremely important in emerging and developing an economy.

Alex Miller (14:43):

So it's that public-private collaboration that's-

Liz Curmi (14:46):

Correct. To a project finance financial structure as well. What we're also seeing is smaller companies which provide some of the solutions to hard-to-abate sectors are financing in multiple ways. They're either raising equity as they normally do to venture capital private equity firms, but they're also getting government support. They're also selling carbon credits. And so what they're doing is they're stacking up all those revenues and then they're able to put in a project in and actually advance in some of the technologies.

Alex Miller (15:13):

And I guess we're also seeing more scrutiny of these markets as well, which sometimes can be a seemingly negative news, right? But actually that's suggesting that these markets are maturing.

Liz Curmi (15:20):

Correct.

Alex Miller (15:21):

I'm thinking of carbon credits for amongst other areas.

Liz Curmi (15:24):

There is some issues with the carbon credit market that a lot of people are trying to work on, but I'll give you a simple example. [inaudible 00:15:30] companies, these are companies that kind of suck out CO₂... Absorb, CO₂ is a better word from the atmosphere.

Alex Miller (15:36):

Revolutionary technology.

Liz Curmi (15:37):

Revolutionary technology will cost a lot of money. Massive engineering projects. What they're doing is they're selling off certificates to companies and say, if you invest in my firm, I will guarantee you CO₂ comes to you. And so it's like a certificate in the future and they're using it to actually try and raise a lot of money in order for these big engineering solutions to come to market. And they are important. We need all sorts of technologies to come out there and decarbonize.

Irina Gorbounova (16:04):

I think this also demonstrates, so the point of innovation, it's not just innovation and technology, it's also innovation and business model and how you fund those. You really need these layers of different funding to get to this capital cake-

Alex Miller (16:17):

This is a major shift for some companies. I mean, some companies have been on the journey for a long time, but it's thinking about where one came from and where one wants to go to. And that's a cultural shift in a company as well, isn't it?

Irina Gorbounova (16:28):

Good Things Happen - S5, EP 5 Hard to Abate

No, absolutely. And I think I've seen, for instance, since we launched XCarb Innovation Fund, there is definitely a lot of excitement around building innovation ecosystem by exciting our R&D and technology and scientists people within the company, but also being part of the global innovation ecosystem. So you could definitely see the shift as well.

Alex Miller (16:49):

And your own journey to join the efforts at XCarb were particular, weren't they? Maybe you could remind us of what motivated you.

Irina Gorbounova (16:57):

I've been focused on mergers and acquisitions for a number of years. I've been in the steel industry now for more than 20 years. But around 2015, probably coinciding with the Paris agreement, I started to appreciate the carbon footprint. And so I gave the credentials to steel. Steel is incredible material. But this is when I realised that the production of steel results in a significant volume of CO₂ emissions and it's really how do we get to produce steel sustainably that I started to focus on some of our investments in recycling base and also on launching our venture fund to identify some of the most disruptive technologies.

Alex Miller (17:40):

So I guess I'm always fascinated, I read about what you do also in terms of communicating this narrative. Now you go into schools and you speak to young people and there's a lot of views out there, there's a lot of passion. And how do you communicate that in a way that the complexity of your industry is one that can be both understood but also appreciate the journey it's on?

Irina Gorbounova (17:58):

This is an excellent question because engaging with youth, engaging with children on complexities of navigating the climate change is really about demonstrating to them the range of areas where they can make a difference. So I think it's really... So for instance, with our funds, we have made a presentation to schools that I did deliver in my son's school, which was quite interesting and exciting experience. But really our presentation, first of all highlights the role of steel in everyday life.

Alex Miller (18:32):

It's ubiquity. Yes.

Irina Gorbounova (18:33):

Yes. Because what we try to do is break it down in something that can excite children. So how do you use steel in everyday life? And then it gives the overview of the climate change and the issues and the challenges we face. And then it also explains on the role of steel in carbon emissions. And most importantly, we talked about some of the groundbreaking disruptive technologies that we support to really transform the industry to the net-zero. And that got them really excited. And another important point was to highlight that it's not just the work of scientists and technology people. It really takes various professions and various skills. You need the engineers, you also need finance professionals and lawyers and project managers.

Alex Miller (19:21):

And communication is a big part of this, isn't it?

Irina Gorbounova (19:23):

Exactly, exactly. But really to inspire them to see that their skills and passion, whatever they might be, can be really used and can really be used to positively contribute to climate change.

Alex Miller (19:35):

I'm sure you inspired some of those classrooms.

Irina Gorbounova (19:37):

And it was actually quite great.

Good Things Happen - S5, EP 5 Hard to Abate

Liz Curmi (19:39):

I'd say I want to copy from the presentation. Because I can't go down to a level of my seven-year-old talking about climate change, it's so difficult.

Irina Gorbounova (19:45):

Our communication team is now preparing to make it also publicly available. And I think it's a great narrative and we must focus on the future generations and get-

Alex Miller (19:55):

So in a sense, everybody's working on this. You've got the industry's working on whether it's steel, cement or others. And we've got obviously the youth engaged as well. Liz, what's the message, I guess you want to leave with our listeners here in terms of they're here, they understand this is important, but what should they take away?

Liz Curmi (20:10):

I think the only thing that I'll tell you, or the main thing I'd say that I came out of this report is I was pleasantly surprised that in three years, just three years, the industry has moved, all the industries have moved substantially. And when I was approached to write this report with my colleague in the bank saying, can you please write this report? I was going, I have to research steel and cement again, as much interesting the sectors are, they are very complicated. And I [inaudible 00:20:36] moved it was so expensive to decarbonize these sectors and it has moved substantially such a short period of time.

Alex Miller (20:42):

So it's not just talk, there really is action.

Liz Curmi (20:44):

No there really is action. What I would say is that government support is essential because there's a lot of tight margins in these industries, and they're the backbone of our economy. And they need help to scale up all the solutions needed. And then once you do that, they will fly, they will move much, much faster. And I'm super excited for the decade ahead to actually see this really move forward.

Alex Miller (21:05):

It sounds like we're already on the cusp of a huge change and Irina, anything you'd leave-

Irina Gorbounova (21:09):

I was thinking about it. It's just no one should think it's going to be easy, right? We've been on this journey for a number of years and it is going to be tough. But having said that, we need to start framing things positively and we need to... Like we just discussed and getting next generations excited. It's going to be a journey. It's not something that's going to happen overnight, but it's one of those challenges in front of us that we just must get together and overcome.

Alex Miller (21:43):

Well, it sounds like both innovation, technology and powerful practitioners such as yourselves engage. We've got a good chance. Irina, Liz. Thank you both very much.

Liz Curmi (21:53):

Thank you.

Alex Miller (21:53):

Thank you, Alex.

Speaker 4 (21:57):

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