

Tim Phillips [00:00:09]:

Welcome to the latest episode of Voxtalk's Climate Finance, with me, Tim Phillips, and hello to my co host, Alissa Kleinnijenhuis.

Alissa Kleinnijenhuis [00:00:17]:

Hi, Tim.

Tim Phillips [00:00:19]:

Today we've got something a little bit different. Our guest is from the finance industry, someone whose early career was spent in corporate investment banking. Now, this isn't our usual guest, you might think, but prepare to be surprised. So, Alissa, who is our guest today?

Alissa Kleinnijenhuis [00:00:35]:

Today we have the great pleasure of having Frederic Samama join us. He's currently the head of strategic development at S&P Global Sustainable. Welcome, Frederic.

Frederic Samama [00:00:46]:

Thank you. It's my great pleasure to be with you. And sorry for this French accent that you will hear for the next minutes, so.

Alissa Kleinnijenhuis [00:00:58]:

Tell us a little bit more about your background in asset management.

Frederic Samama [00:01:03]:

Well, I joined the asset management about certainly less than 15 years ago. Prior to that, I was in investment banking, as you said, where I pioneered the first leverage employee share purchase programs, a financial innovation that changed the landscape in Paris by allowing employees to buy shares of their listed companies. And then I joined Amundi, where I was in charge of clients. And in parallel, as a personal initiative, I launched an academic center with Patrick Bolton and Joseph Stiglitz, dedicated to sovereign wealth funds and climate change. I did that in 2009. And the date is important because it was just after the financial crisis, and we all know that with the financial crisis, we were very close to a total collapse. And then I thought, governments are not so good at anticipating and sometimes managing the crisis and a new one is coming. Climate change.

Alissa Kleinnijenhuis [00:01:59]:

Yeah.

Frederic Samama [00:01:59]:

And so I thought it's time for thinking out of the box.

Alissa Kleinnijenhuis [00:02:03]:

And of course, the difference is that once you have a climate collapse, it's nearly irreversible. So

we must this time, be in time.

Frederic Samama [00:02:10]:

True. And very importantly, the question was, can we bring some new players to the table? And the very innovative thinking at the time in 2009 was, what about the investors? What is fascinating is that when we are back in 2009, climate change was like nuclear weapons. It was for governments.

Alissa Kleinnijenhuis [00:02:28]:

Yeah, right.

Frederic Samama [00:02:29]:

And we said no, because if it's a risk for the planet, it should be a risk for the assets of the planet. And so for the ones who are managing the assets. And it was really the very simple way of thinking. But it was so innovative that Banque de France is kind enough to say that I've been one of the seven people around the planet to bring climate change to the financial world.

Tim Phillips [00:02:50]:

Yeah, Fred, this is surprising, because looking back on it now, we might think that this isn't such a strange way to go. But 2009, when quite a few people in your position were just thinking about hanging on to their own jobs. What inspired you to think that this was going to be something to which you would, well, basically dedicate the rest of your career?

Frederic Samama [00:03:10]:

That's why I started by saying that I did the first part of my career by inventing this mechanism dedicated to employees. And so if there's something in common, all my career long, is financial innovations with impacts on society. That's what I do. And so when I saw this problem, I thought, well, that's another situation where I need to mobilize creativity, financial innovations, to help solve a big problem. In a certain sense, it's like politics, but with financial tools.

Alissa Kleinnijenhuis [00:03:41]:

On your point that if it's a planetary problem, it's also a problem for the asset managers that hold the assets on the planet. That is so logical. But also, all our macroeconomic models up to recently did not include nature. So what are the most important evolutions that you've witnessed in sustainable investing from 2020 till today?

Frederic Samama [00:04:04]:

By framing the question this way, it means that we are accelerating. We spoke about 2009, and then with the COP21 investors got convinced that they could or they should, put climate change on their radar screen. So now you're asking about 2020 or 2021 recently, and here suddenly, we are the COP in Glasgow. And in Glasgow, something fascinating happened. The fact that investors representing \$130 trillion took the commitment to be carbon neutral. \$130 trillion is such a big number that personally, the only way to make it slightly

concrete is to say that 0.01% of that is \$13 billion. So when the fraction is already a big number, it means that there is something, I would say, in the space that is unprecedented in terms of size. So we had this big news, and Mark Carney allocating a lot of efforts to bring all these investors to the table. Truth is that two years later, not so much has been delivered. And so I believe that our industry is facing a moment of truth. Either the industry does not deliver so much, and then civil society could be in a position to challenge all these commitments, or we analyze why the delivery has been so limited, what are still the obstacles? We tackle the obstacles and we keep the momentum. And we know that this momentum is so important because we know that finance, climate change requires to mobilize private markets, private investors. So we are really, at this moment of truth. Are we able or not, as an industry, to deliver the commitment?

Alissa Kleinnijenhuis [00:05:45]:

We know that you've written a paper with Patrick Bolton and Marcin Kacperczyk on net zero carbon portfolio alignment. So, could you tell us about the idea behind this paper and how this paper fits within your broader thinking on how we might be able to get finance to deliver on its commitments?

Frederic Samama [00:06:04]:

We wrote this paper to address the concerns of the investors and to help them keep their commitments. So it was really part of this analysis that we were living a moment of truth. When we ask investors, what are your obstacles right now? Two categories. The first one is, is that part of my fiduciary responsibility? Question one. Question two. If I can get convinced it's part of my fiduciary responsibility to be carbon neutral, can I achieve that without portfolio risks, meaning without generating new risks? And here we bring two answers to these two questions. The first one is about the fiduciary responsibility. Governments are increasingly committed to be carbon neutral. These commitments were representing only 10% of the emissions back in 2018, and it jumped to 70% of the emissions in 2021. So suddenly, the governments have said, we want to be carbon neutral. Also, the world is not there at all. The world is at best at 2.4. So, to make a long story short, there is a gap between what the governments are saying to be carbon neutral, very often based on the IPCC, and where the world is. And so it generates a macro regulatory risk. There is a risk that the governments will keep their words, their commitments. There is a risk that governments will really achieve being carbon neutral. Do we already observe something like this? Yes. Transportation. In Europe, the thermal cars are representing in 2022, 65% of the production. In 2030, it should be 6%. Why? Because EU passed one of these laws that says, we want to be carbon neutral in 2050. And then they said, how many years does it take to take cars off the roads? 15. And so, in June last year, EU passed another law that says no sell of thermal cars in 2035. If no sell of thermal cars in 2035, 6% in 2030, versus 65 in 2022. So you, as an investor, are you at risk of a regulation that changes dramatically the anti industry in Europe? The answer is yes. Are you exposed to the scope three. The products? The answer is yes. Is that already reshuffling the anti industry around the planet? The answer is yes. Tesla and BYD will enjoy 800% growth between 2019 and 2026. Tesla and BYD will produce as many cars as General Motors, Ford and Honda in three years from now. So, yes, there's a case study

that investors should manage the macro regulatory risks related to government's commitments. So now, the question number two is, okay, how to do it? Here we had a very simple approach with Patrick and Marcin. We said, well, as governments are referring to the IPCC, let's have IPCC aligned portfolios. Everyone talks about being carbon neutral. The ones who know about being carbon neutral is IPCC. And here we say, what does IPCC say? They say something very simple. They say, we, the planet, if we want to be carbon neutral, we only have a 300 gigaton CO2 budget. It means that in 2022, concretely, it means to reduce by 12% the volumes every year of CO2. And then we said, if it's true for the planet, it should be true for the proxies of the planet, the economies, and the proxies of the proxies, the indices. And so the very simple idea is to say, well, let's use this -12% and let's plug it into portfolio or indices in order for the indices to mirror the trajectory of the planet, in order to be carbon neutral. And then suddenly we have IPCC aligned equity portfolios. And the beauty of that is that we discovered by doing that, that it was feasible without portfolio risks, with low tracking errors, with low sector deviations. And even better, when we do some simulations, it will have outperformed for the SNP 500, as an example, with ESG filters, it will have outperformed the parent index by about 70 basis points on an annualized basis over the past five years. So really, we say to the investors, yes, you should do it because it's a way to hedge your regulatory risks. And yes, you can do it with very limited portfolio impacts. So it's a good bet. But then by writing the paper, we said, hey, wait a minute, what is IPCC saying? It's saying that the carbon budget shrinks.

Alissa Kleinnijenhuis [00:10:53]:

Exactly.

Frederic Samama [00:10:54]:

The window is closing. So it means that if investors are waiting, now that we have this scientific based approach, it means that for all the investors that are waiting, well, it's becoming more and more challenging to be carbon neutral. And very concretely, the -12% that is working for all the investors investing in 2022 is becoming -20% in 2025 and -47% in 2028. And here the story becomes fascinating because IPCC had said for years, loud and clear, we can tackle climate change, but the window is closing. At the same time, none of the financial products had ever integrated the cost of delay.

Alissa Kleinnijenhuis [00:11:35]:

Yeah, that's insane.

Frederic Samama [00:11:37]:

I can't say that. But green bonds, low carbon indices, EU indices, EU taxonomy, name it, none of them were integrating this cost of belief there was a kind of disconnect between what science was saying and the financial products. And so when we published the paper, it immediately got the attention of policymakers like the ECB. Paul Hibert started his own presentation with the other central banks by saying, you know what, there's a paper that has been published recently. And they were right. They're framing the debate in a way we should have done. Timing is everything. And so the paper is changing the markets participants perception and bringing the

debate where it should be, the time urgency, because tomorrow it's no more feasible. We only have six years of carbon budget. So, you know, all the debates about the data quality, the double counting, all the reporting and so on. Hey, science tells us we only have at the current path six years of carbon budget. Is that time to move quickly? Yes, absolutely.

Tim Phillips [00:12:42]:

Alissa, sometimes with academics, I don't wish to be rude, you have really good ideas, but they're not the sorts of things the industry is going to take up. What about this?

Alissa Kleinnijenhuis [00:12:51]:

I think this is an idea that can be implemented, and in fact I think it is being implemented. And I would very much echo Frederic's words. There's a paper that just came out in Nature called the seven reasons why to act. And it exactly shows that the slope of how quickly we have to get to net zero has becoming much sharper because of the delay. And of course, the scientific reason why there is a point where we run out of time is that at some point you come to a point where you cross tipping points and then you get all these planetary disasters and that's, I think risk of tipping points where part of the earth will may become uninhabitable are actually not properly priced. I think by market participants.

Frederic Samama [00:13:34]:

You're very right. And right now we only have 200 gigaton of CO2 left and we are spending about 35. That's where the six years comes from. And then we know that above one and a half degree increase, then we are entering into this zone of tipping point. So the interest really of this paper is to make it very concrete in the financial world. Also, it was very clear for the scientific world. Now to your question, is that just an academic paper? And I take your question. You notice that I'm working at S&P, and so I will not say too much, but we have launched indices based on this approach and on the S&P 500 Europe global developing. So by definition, as we have launched indices, it means it works.

Alissa Kleinnijenhuis [00:14:27]:

Why did you develop the MSCI low carbon index? And can you tell us a little bit more about what it does and why it works.

Frederic Samama [00:14:35]:

So, no, you're asking me a question about MSCI, although I'm at S&P.

Tim Phillips [00:14:40]:

Okay, you've worked in more than one place.

Frederic Samama [00:14:45]:

I was at Amundi at that time. And it's a very nice story. So I will make a long story short. But we did, with Patrick and Joe, a conference that gathered investors and policymakers and academics in 2010. And for the first time, all these people were talking to each other. Before

that, policymakers were not talking to investors, were not talking to academics. And very soon after this major conference with Joe, Al Gore, George Soros and so on, we organized, under the umbrella of the Rockefeller Foundation, a seminar that gathered, I would say, the most motivated people, and one of them was the CEO of AP4. That was a Swedish pension fund managing about \$35 billion. And during the conversations, the CEO of AP4 said, you know what, you convinced me climate change is a risk that I should integrate in my portfolios. April 2011. And then he said, I'm so convinced that now I'm committed to decarbonize my portfolios for five to 10%. I don't know how, I don't know when, but my word is my bond. So, Frederic, find a solution. Okay. Being in charge of sales at Amundi, 5-10 percent of \$35 billion, he had my attention. And then I explored what was available at that time. You had either private equity funds, it was not feasible for \$3 billion, or you had Green ETFs. And when we looked at the Green ETFs selecting the green companies, they were always underperforming because they were taking technological bets very much related to regulations that were changing nothing that the investors could buy. And so I called him back and said, I'm sorry, I don't find anything. And then the conversation continued. And then I said, but instead of me proposing something, what do you invest in? I said, well, I'm using a lot of passive products. And then I said, but passive is not something abstract. It's just a list of constituents. So maybe what we could do is assess the carbon footprint of these constituents, and maybe we could take some of them that are more exposed to climate change and replace them with a peers. And then we started the homework. And what was really fascinating is that we discovered that almost nobody had done that. The ESG world was totally disconnected from the passive world. And then we thought that, but maybe if we do that nicely, we can do it with a low tracking error, meaning that maybe we could have a green index that will behave very closely to the parent index until climate change risk will be priced. And by doing so, we will generate a free option on the mispriced risks. And by doing that, we will generate a way to tackle what Mark Carney will say a few years later, the tragedy of the horizon. Because if you have a product that tracks the parity index well, you can sleep on it until regulators, policymakers are imposing new constraints on the polluting companies. And so suddenly we were generating a new product that was tackling the biggest problem at that time, the tragedy of the horizon. And very quickly it became very popular, and some estimates are saying it's maybe almost a 500 billion dollar now industry. That's pretty big. And again, at that time, we were generating a form of another way to say it. The Diet Coke. You take the sugar out, you put some aspartame, the same taste, but your doctor is happy. And so that was a really concrete example of another financial innovation tackling a major issue for investors, and by doing that, helping them do the first move into that space.

Alissa Kleinnijenhuis [00:18:21]:

So you are saying that this product helped to bring investors on board from the outset, while tackling the tragedy of the horizon. But at the moment that regulatory risk would come, at the moment the regulator starts pricing carbon, for example, I imagine that these two indices would diverge in price. So do you already observe that more regulations have been implemented that have caused these two indices to have a spread?

Frederic Samama [00:18:44]:

Well, a spread, that's a good question. The idea will be that there will be some tracking error increasing, you're right? Yeah, but with out performances. Yes. This indice that we created back in 2011 for the first prototypes, have outperformed thereby 30-40 basis points on a neutralized basis, the parent indices and the belief that by being green you sacrifice returns, is proven being wrong. And for the very basic idea that the polluting companies are more exposed to regulations and so on. And now the new innovation ten years later, is the fact that we have fine tuned this technology by knowing how to monitor this decarbonization level in order to be aligned with the IPCC.

Tim Phillips [00:19:28]:

So I note that Marcin, your co-author on the net zero carbon portfolio paper, he has written another paper, Carbon Transition Risk and Net Zero Portfolios. Is this paper developing the ideas that you had a couple of years ago?

Frederic Samama [00:19:45]:

Well, Marcin has written a paper elaborating on absolutely an idea that we put in the paper with him and Patrick, is the fact that when you have this IPCC aligned approach, meaning reducing gradually the carbon footprint in a way that mirrors the IPCC, then you can simulate everything being unchanged if and when a corporate will exit the portfolios. And then it becomes fascinating because we can measure the time to exit. We can say, you, the corporate, you're exiting in 3, 5, 10, 20 years from now. And if we could communicate this information to the corporates, it will be an extraordinary form of engagement. In the paper, just based on scope one and two. But it's easy to do on scope three. We say, for example, to take a French company, Total is exiting in 2039. If we could say that to Total, we say, now it's in your hands. Either you're fine with that to exit the index or you're not. And you have to reduce your carbon footprint and you have to do it more than your peers, because if your peers are already reducing, as we will choose a corporate that are overall reducing, the sum will reduce its carbon footprint. We are creating the competition within each sector. So it's a mix then of engagement and disinvestment. Engagement, because we say to Total, here's the timeline and disinvestment, because if you don't take action and more than your peers, here's the exit date. Here, it's a very logical example based on the concept paper that we published. So it's nothing to do with reality, but it's to see how powerful this idea could be.

Alissa Kleinnijenhuis [00:21:25]:

This only matters if that index is large enough. If not many would invest in the index, Total wouldn't perhaps not care. So in your experience, do the firms that you engage with when you tell them this is the date of expected exit from the index, do they care? And do they then try to lower their emissions to stay in?

Frederic Samama [00:21:45]:

There's a literature and a concrete example that say that the impacts on the corporates goes beyond what could be expected from the size of the investors investing into the indices. The concrete example is with GPX 400 in Japan. This index was created by the stock exchange

based on the governance and that say that actually the impact was pretty big in the industry. Why? Because to be excluded from this index had a huge hallow effect, meaning that the corporates would not be happy not to be in the index beyond the size investing into it. In Japan, this index was even named the shame index. It says something important. It says that all these corporates are not feeling the social pressure and it goes beyond the financial flows related to the index.

Alissa Kleinnijenhuis [00:22:35]:

You know that there are other papers that have been written on the topic of exits versus voice. There is a famous paper by Luigi Singales and co-authors, and there's another paper on the efficacy of divestment by Jonathan Berg at Stanford. What should our listeners know that's not in their papers?

Frederic Samama [00:22:53]:

The point is that when you disinvest, let's say oil and gas from oil and gas companies, what are then the incentives from corporates to adapt? What are the incentives for all these corporates to mobilize their engineers on renewable energy? Second, can really investors disinvest from a notai sector? Because it means to take by definition a portfolio risk. And we have seen with the recent crisis that the oil and gas companies have done very well. So my point here is to say that can really investors implement that on the large scale? Many risk departments will say it's complicated, too many risk portfolio risks. And does it have really an impact on the corporates by banning them, you don't open the door for their transformations and then you have engagements. It can work. But the problem is that sometimes without the baton, what kind of pressure do you really put on these corporates? And so here what we are coming with is a solution that combines both. We could engage with a corporate by saying, here is your exit date, and now it's in your hands. So you have all the opportunities to change, to reduce your carbon footprint, and by doing that to increase the likelihood to remain within the indices. And if you don't, we disinvest, but only then. So you see, it's a very powerful tool because it's a dialogue with a conclusion. If the corporates have not done the efforts enough, and not to ban anyone for the beauty of banning someone, but really in order to align the portfolios with this IPCC objective, that itself is increasingly becoming the objective of the government.

Tim Phillips [00:24:46]:

So Fred, this new fund, the EGO fund, what is the thinking behind that?

Frederic Samama [00:24:51]:

It's another case study of financial innovation tackling a problem for society. With Patrick, with Joe, some other authors, we wrote a paper that said we know the situation, we know that we have pools of assets in developed markets and we have needs for green infrastructure financing in developing markets. And there is a very well known misallocation of capital. Money is in the developed markets and some of the needs are in the developing markets. And it's a lose-lose situation for the investors in developed markets that are not benefiting from the growth in developing markets, and the people in the developing markets are not benefiting for the capital

flows of the developed markets. So really it's a total suboptimal situation. And then in partnership with IFC, we said, okay, what are the reasons behind that? So you see, it's always the same approach is what are the concrete problems and is there a way to solve them? A very low key, very pragmatic, very client oriented approach. And the reasons that we identified are at two levels. So it may sound surprising, but for many investors, to invest into emerging markets is considered as too risky. If you ask many European investors, how much do you invest into emerging markets? The answer is zero. And second, infrastructures, here, if you ask the same investors, or around the planet, with the exception of the Canadians and some investors in the Middle east, you ask them how much you invest locally into infrastructures, the answer is zero. And so the idea that they could invest into Mexico, Thailand and so on, although they don't invest into their own European countries, doesn't make sense. And why are they not investing into infrastructures, even locally? Because it's a very special asset class. It's no more about equities and bonds and so on. It's about projects. And so almost everywhere they don't have the resources to assess the risk. So we have two big problems. And we came with a solution to tackle the two big problems. So we created a fund that was a structured fund, meaning with a junior tranche, a mezzanine tranche, a senior tranche, and the junior tranche was provided by the IFC. So it was a way to have a risk sharing mechanism. So it means that the risks associated with investing into emerging markets were transferred towards IFC. That got good returns for that. So we were tackling the problem number one, how to de risk investing into emerging markets. Then we had the problem number two, how to invest into infrastructures. And here the IFC had a moment of genius. They said, let's have the local banks. So the banks in Mexico, Thailand, China and so on issue green bonds. We, the investors, by buying the green bonds issued by banks, we will buy the balance sheets of the banks. Because the green bonds is, at the end of the day, the risk of the issuer. And the banks are regulated animals, so we know about them. And by issuing a green bond, the banks will take the commitments to channel the money towards green projects. So we were decoupling the risks, we were taking the balances of the banks from where the money is lending. And suddenly we are creating a fund that has about \$2 billion to deploy. So we are transferring money from European pension funds towards green infrastructure projects in emerging markets. And the deal has obtained six awards, including the prestigious one from the PRI of the impact investing deal of the year. And I've been lucky enough to write a paper with Patrick Bolton and Xavier Musca, the former Chief of Staff of President Sarkozy and former Head of the French Treasury, on this and this approach that says, let's mobilize one investor, in this case IFC, to create a prototype dedicated to other investors and dedicated at solving the problems that they are facing. And so we used the money of the IFC to unlock investors capabilities. So it was really a leveraging effect. And very concretely, investors like Alekta or AP4, the largest insurance company in Sweden, or one of the leading Swedish pension funds, invested for the first time ever in emerging markets.

Alissa Kleinnijenhuis [00:29:23]:

I guess the big question is, how do you scale this? Because you're mentioning, I think, if I remember correctly, that it's now a few billion in size, but it's pretty clear that for the green transition to occur in time, and we know that we probably need to invest over a trillion a year. So this seems to be a very powerful solution, but it hasn't really achieved scale yet.

Frederic Samama [00:29:46]:

It's all about this, tackling the problems here and there. Here it was a prototype now to be replicated by other players. AIB started something similar. So it's all about innovations, leadership, courage and willingness to push the envelope. But for that, the three financial innovations we have discussed so far have in common to start with the investors constraints, the investors obstacles, and then mobilizing indices and carbon data for the first low carbon indices, mobilizing IPCC here, mobilizing green bonds and derisking mechanisms. So each time there is another problem, and each time it requires to select some innovations, sometimes just to combine them. Because in these three case studies, it's just by combining things that we have not combined so far that we bring to market something that works. So it's not about new sophisticated models or it's more about playing the Rubik's cube, if I can say. And the three deals have in common, almost investors accepting to play the role of anchor investors to start the process.

Alissa Kleinnijenhuis [00:31:00]:

What do you think is the most important step we should take today, in 2024, within the space of sustainable investing, to stay within the carbon budget?

Tim Phillips [00:31:11]:

I think she's asking you, Fred, what are you going to do next?

Frederic Samama [00:31:16]:

Can I say holidays or vacation?

Alissa Kleinnijenhuis [00:31:18]:

I'm sorry, we don't have time, Fred.

Frederic Samama [00:31:20]:

Okay, so I canceled my vacation. What is now the urgency? It's no more about convincing people we have achieved that. It's now on the radar screen of all the investors. So it's no more exactly about the why, but it's all about the how. And very often the policymakers are thinking, by disclosing something, all the flows will magically be allocated at the right place. Sometimes it requires more than that. With the three examples I gave, it was about financial innovations solving or tackling the remaining obstacles that the investors are facing. So I think now it's a fantastic call for innovations, for new products. Let's think about the physical risks. We know that the physical risks are booming everywhere. We know that we have more and more droughts, tornadoes, and so on and so on. We know as well that the insurance companies cannot insure the world. And so more and more people are getting uninsured with all the inequalities associated with that. So either it's a fantastic call to the industry to invent a well functioning CAD bond market. That's what I said at the COP. I said we should work collectively on developing mechanisms to transfer the physical risks into the hands of investors that could have a new asset class decorated from the Fed policy, making the risks very well understood. Yeah, that's a

concrete example. We have so many things to invent. We have another example of what we should think about. Society is requesting from corporates to adjust their business models. And for that, it requires time. You don't become a green company overnight. And the problem is that very often the investors are not there for many years. The average holding period on the stock exchange was eight, nine years in the 60s and in the 80s it was only 18 months. And so you can imagine that it has even went down. So here we have a kind of mismatch between what we are requesting from the corporates to shift their entire business models for the next 3, 5, 10 years. And with investors, the owners of the companies that are around for a few months, not to say a few weeks, Jo Stiglitz made it very clear in Davos a few years ago, what about the capital structures of the corporates? And here we have another paper with Patrick that say that we should reinforce the presence of long term investors to help them get this transition. And so we propose the concept of loyalty shares, loyalty warrants that will be offered to the passionate investors, very similarly to what already exists for employees that are getting stock options top of their contracts. So for the employees that matter, there is a vesting period, and after that they have stock options. And here we mirror the same mechanism, but for investors by saying there is a vesting period, if you buy and hold shares for, let's say, three years, then after this period of time, you get warrants. So it's a way to reward the patient investors. And again, by rewarding the passionate investors, it should help the corporates adjust their strategies over the long run towards a low carbon economy. So you see, in many places there is a call for innovation to make the markets more resilient and to help the players do their jobs now that they are almost all convinced that they must do it.

Alissa Kleinnijenhuis [00:34:58]:

I really like that you mentioned that we should start by thinking about the investors constraints, because I think very often it's not an unwillingness, but somehow an inability. And this is, of course, where innovators like yourself are so important, to alleviate these constraints so that we can make investors part of the climate change solution and do so in time. So thank you, Frederic. Thank you, Tim.

Tim Phillips [00:35:27]:

Yes, thank you, Fred. I'm going to list these two papers that we mentioned, Patrick Bolton, Marcin Kacperczyk and Fred Samama. Net Zero Carbon Portfolio Alignment. And that was published in 2022 in the Financial Analyst journal. Also Cenedese and Kacperczyk. They published Carbon Transition Risk Net Zero Portfolios. That was in 2023. So look those up.