WE ARE ETH – Episode 42

With Remy Buser, Chemist, CEO and Co-Founder of Bloom Biorenewables

Listen to Podcast

Chapters:
00:00 Introduction and the Need to Defossilize Materials
03:05 Remy Buser's Background and the Story of Truffles
05:23 From Swiss Blot to Bloom Biorenewables
09:00 Moving Away from Fossil-Based Carbon
11:45 The Role of Petrochemicals in the Chemical Industry
15:34 Replacing the Petrochemical Sector with Biomass
20:19 Working with Politicians on Environmental Bills
21:42 The Importance of Politics in Addressing Climate Change
23:35 Childhood Aspirations and Curiosity about Materials
28:52 Favorite Places in Zurich

[00:00:00] Remy Buser: You cannot decarbonise materials because you need the carbon atom in them. So we say defossilise would be the better word today. If we could rewrite the kind of way people speak, we would strongly advocate for defossilise because that's what humanity has to do.

[00:00:27] **Susan Kish:** In this episode, I'm talking with Remy Buser, ETH alumni, chemist, and serial entrepreneur, currently the co CEO and co founder of Bloom Biorenewables. This is the We Are ETH podcast, and I'm Susan Kish, your host.

Remy, good morning.

[00:00:49] **Remy Buser:** Good morning.

[00:00:50] **Susan Kish:** You have an amazing background. What is that? Is that, are those trees? Is that a landscape? What is that picture behind you?

[00:00:59] **Remy Buser:** So this is actually our logo on the kind of design we have around our brand. And it represents trees because that's what we use to build a fossil free world with Bloom Biorenewables.

[00:01:14] **Susan Kish:** Very, very cool. Just to make sure I remember this correctly, we have met before, right? We Yes, we did. Switzerland's a very small market. It was 21, 22.

[00:01:24] **Remy Buser:** It was in 22, I think, um, at the EVF organized by Emerald, where you were actually a key person in the event since you were doing the moderation of the whole event.

[00:01:39] **Susan Kish:** And Bloom was one of the companies that presented to that audience of limited partners, venture investors. And strategic investors, right?

[00:01:49] **Remy Buser:** Exactly. I got the chance and I think we got invited by Breakthrough Energy Venture and I got a chance to be on stage and, and pitch, uh, to, to the crowds.

[00:02:02] **Susan Kish:** Fantastic.

Well, it's wonderful to reconnect. Delighted you're here. The story you tell at your TEDx talk is around, it's a great story, it's about truffles. Can you share that story? Because as a truffle fan, I thought it was fascinating.

[00:02:18] **Remy Buser:** Yes, so the story is the same, but the truffles is just an example of how deep The petrochemicals are actually in our system and a lot of people underestimate how much the world of things around us is actually shaped by petroleum.

And the truffle example is a very good one. And for those who haven't seen the TED talk, which I recommend, is that today a lot of the truffle taste in oil in particular is made based on petrochemical material or starting material.

[00:02:52] **Susan Kish:** In other words, it's. Not an extraction of the fabulous truffles from Alba.

It's the output of oil and it's extraction of the biochemical output from oil.

[00:03:05] **Remy Buser:** Exactly. So in the end, this, uh, at least to my view of the world, is not necessarily a bad thing per se, it's just to show how actually with the building blocks of chemistry, in the end, we can reproduce what humans experience as tastes in that case and basically make something taste good without having to harvest truffles, which is quite a difficult and costly thing.

[00:03:35] **Susan Kish:** So Remy, you have a wonderful career. You've been a scientist, you've worked with science on the policy and political side and now you're working with science in the business side. How did you get started? How did you decide chemistry is what I want to do? Did you just sort of always say, I've got to go study this or?

What was the catalyst to make you study chemistry and biochemistry?

[00:03:57] **Remy Buser:** Yes, I think I, I was always intrigued by the world around me. And since a child, actually, I was always wondering how things were built and, and so on. But what the real trigger was in high school, uh, in Switzerland, you probably around, uh, 15, 16.

And, and there we had our first kind of chemistry, uh, classes and, and really became clear. This is what I wanted to do for my studies. Then I went uh EPFL, uh, in, in Lausanne. Mm-Hmm. , uh, did my, um, undergrad there and, and finally ended up, uh, doing a PhD at, uh, ETH in biochemistry.

[00:04:38] **Susan Kish:** What was the topic of your doctoral thesis? What did you write about?

[00:04:42] **Remy Buser:** Or research rather. In the research I did at ETH, I looked at the replication of DNA and the mechanisms that actually regulate it. And the reason why this is of interest is to understand life in general or how it reproduces. But more specifically the applications would be in cancer research to understand how errors actually in DNA replication happen.

[00:05:11] **Susan Kish:** Very cool. While you were at ETH or shortly thereafter, you started a company called Swissblot. Can you tell us about Swissblot?

[00:05:19] **Remy Buser:** Yes. During my PhD, I was always attracted to the fact of building something of my own. My father was himself an entrepreneur. more into trading and, and import export, but it always gave me a view on, you know, what it could be to run your company.

And I also could, uh, help him (Susan "It was in your blood") . It was somehow in my blood and if he was here still, he would be proud of me, but, uh, he left us in 21. And I really have, um, you know, this view of the world and, uh, my PhD comes to an end very soon. And, and we were doing this experiment in the lab that is an analytical experiment called Western Blot.

That's why the company was called Swissblot. And this is really an approach that is extremely important in biochemistry, but that is prone to a lot of errors. So we designed a system to allow this to be more automatised and have an ability to have more accurate readout because of a capillary system without going too much into the details.

[00:06:34] **Susan Kish:** So when you say system, is this like a computer program or is this like a lab defined process or what is a system? Or rather, it could be a million things, but.

[00:06:44] **Remy Buser:** Today it's electrophoresis. So you basically use a current to make molecules or proteins move in a matrix and the bigger ones move slower than

the smaller ones and then you can separate them and you can understand a complex mixture.

You're welcome. And today this is really, we make these gels or the matrices by hand still today. And what we designed is a sort of a robot that would allow the separation in a capillary and then have a 3D printing system at the end of the capillary so that you can really nicely spread the separated molecules on a substrate.

(Susan: "That's so cool!") . And it was very exciting and I think we made extremely good progress. But the reason why things have basically not ended up like we are now doing at Bloom is because we were quite weak on the patent side. And I remember that day where we discovered a patent that was actually submitted during the period of us doing this, but by another company that was looking at exactly the idea we had in mind.

And then our advisors advised us very politely to jump off the boat. So we did, and it's. Also a good experience to go through this, but I think it gave me a lot of the keys and solutions to, to make Bloom what it is now because typically IP was my first kind of concern when I started, uh, the project to make sure that we don't have a kind of repetition of that mistake in the next venture.

[00:08:34] **Susan Kish:** What a great story. From what I understand, and congratulations, you have a fabulous group of supporters. I was very impressed that when you were one of the first Breakthrough Energy in Europe investments, that's Bill Gates's instrument. They have a very interesting global portfolio. Bloom Biorenewables seems to have taken a very unique, but really hard problem around wood and around plants and working to solve it.

So, What is the mission? What's the, what are you trying to accomplish with Bloom?

[00:09:07] **Remy Buser:** So our mission, and I'll come later to, to how this came together, but really the, the mission is to offer a solution to the chemical industry to move away from petroleum or fossil based carbon. As today most people know, we have an issue with an accumulation of CO2 in the atmosphere.

And everybody agrees that we should stop. But funnily enough, very little happens if you measure the concentration of CO2 in the atmosphere. And the reason is just, we all live in these very luxurious lives in the end, because we have all these fancy materials that allow us to communicate here over recorded video.

And all this is only possible because you have 100 years of chemical development, mostly based on carbon structures that allow us to do this. And this is without talking about the energy problem, just from a material perspective, our lives would look very different without petroleum as a main source.

And ...

[00:10:20] **Susan Kish:** So, this is the industry of the DAOs and the BASFs and SAPICs and the Chevron chemicals or whatever the divisions of all the big oil and gas companies who focus on chemicals and synthet refining?

[00:10:35] **Remy Buser:** Yes. So, in the end you have to imagine a barrel is basically some liquid extracted from somewhere that is remains of plants in the end.

So, uh, plankton or algae or trees, and they were transformed over time to, to give a sort of a mixture of carbon enriched material. Then we discovered this as a good fuel, so we burned most of it, starting with coal and then going all the way to petroleum and gas, over a certain period of time, and then this kind of refining became a value creation element because you can actually separate some of the molecules where you can make smarter things out of and even the fuels got very tailored and and designed and ultimately this is today what represents most of the chemical industry. If you look at what type of feed they use to, to make their products.

[00:11:42] **Susan Kish:** Got it. So, the process and the problem you're solving, it's still carbon based, but it's through plants of today, not plants of a gazillion years ago.

[00:11:54] **Remy Buser:** Exactly. It's in the end, as simple as that. So, we like to say that you can decarbonize energy because you can take nuclear energy without going into this debate.

It is almost carbon free because you use a completely different source to generate your energy. You cannot decarbonise materials because you need the carbon atom in them. So we say defossilise would be the better word today if we could rewrite the kind of way people speak. We would strongly advocate for defossilise because that's what humanity has to do.

And this is exactly what you said, meaning you take carbon, but not from, uh, zillions of years, but really carbon that is in a closed loop. So renewable carbon, because this will solve per se, the problem of accumulation in the atmosphere, which is just the problem of we take a material that wasn't there before.

Most of it ends up burnt in the form of CO2, which is the most stable form carbon will end up in and this goes into the atmosphere and a few ppms of that material will affect the temperature of the planet and a whole kind of consequence or cascade of events will follow this.

[00:13:23] **Susan Kish:** I don't think there's any Question about the urgency.

Why is this particular issue so hard? Because you would think that people would have, there's so much wood in the planet and so easy to harvest, you would think that this would have been addressed a while ago.

[00:13:39] **Remy Buser:** Yes, and it probably would have if we didn't have petroleum, just because the evolution. That happened before, and a good example is paper, which is actually made out of wood.

It's processed at hundreds of millions of tons every year to originally produce a support for sharing news or information. And the kind of newspaper was only possible because we had this low cost fiber on which we could print and spread this and use it for a day and then trash it to print a new one the day after.

And this is at a time where actually trees and wood was still a central kind of feedstock for humanity, even for energy purposes. And we come from a renewable society in the end. And then Things have changed or evolved in a way that we realised you can do a lot out of petroleum and in the end, the chemical industry as we know it today has, built its complete kind of pathways on on these petrochemical materials, leaving a bit the biomass or the other types of carbon behind.

In the end, it's not so hard. What I tried to say is we chose one set and then going to the other, that's the hard part. But ultimately it's not necessarily harder to work with biomass or other types of carbon than it would be with, with, with petroleum.

[00:15:18] **Susan Kish:** Breaking down biomass into bits where you have the, you're getting the insights that says, you know what, I should be able to use the biomass for the same end product with 75 percent reduction in emissions and huge efficiency and doing it at a scale that could replace the petrochemical sector.

Is your goal to replace the petrochemical sector with biomass?

Talk about hairy audacious goal.

[00:15:49] **Remy Buser:** No, if we want to simplify it to the max, it's a clear yes. We would like to see all the carbon being used around the globe from a renewable source. It doesn't have to be from us, but ultimately that's where society has to get to if we want to stabilize the climate.

Because like physically, as long as we put CO2 in the atmosphere, the temperature is going to rise. And given that we are, uh, you know, biology or part of biology needs decades or centuries to adapt just slightly, but fundamentally, if you don't have a million years to adapt to these degrees of difference, plants are just going to die and others are going to come up, which happens all the time.

It's not fundamentally problematic, but we need to get to that carbon control in a way. And this is very difficult if you keep on using fossil resources because you would have to pump this stuff out of the atmosphere, which is a thing that is done and certainly part of the solution, but not sufficient by far.

[00:17:02] **Susan Kish:** I understand. As the CEO of Bloom, your career path, doing science and studying at the IMD and whatever feels like you've really optimised your

own path to take that position and go forward. How did your time at the ETH contribute and your experience at the ETH contribute to your effectiveness in what you're doing now?

[00:17:25] **Remy Buser:** I I think the core, uh, element is, is really around understanding science and how to leverage science to answer big problems as we, we call them. And this is really something that ETH really helped me doing. But maybe on, on other levels, ETH has student kind of associations and I got the chance to found the student association of the Department of Biochemistry that didn't exist by chance because normally all the departments already have one of those.

And this is also typically, you know, a kind of, uh, element I like to highlight because it's more on. a social kind of how to bring people together and build kind of dynamics around people that want to move things forward and have a more social and kind of development element in their career.

[00:18:27] **Susan Kish:** And I can imagine that the skill set and the experience from starting an association like that actually helps when you're the CEO, when you're trying to work with diverse stakeholders when you're trying to persuade your investors that you are the right place to put their money and their expectations. So that diversity of experience that you got at the ETH was probably helpful.

[00:18:51] **Remy Buser:** Absolutely. So I, I think it's not just the quality of science, but, but also the environment, the international dimensions.

I mean, in, in the lab, I was, we had the whole world concentrated on a few square meters and in, in the academic kind of approach, everybody wants to help each other. So you have a very open type of contact with people. And some of my best friends are still from this period. Yeah.

[00:19:23] **Susan Kish:** Are you still involved with the ETH or any of your professors?

Or the other PhD students who were in the lab.

[00:19:30] **Remy Buser:** So, I mean, engage personally, yes, I don't actively interact with ETH today in my, my direct work, but typically we like to engage through, um, the kind of academic arm of Bloom, which is at EPFL today. But we have collaborations or we foster collaboration with EPFL on these topics around carbon, biomass, and how to build the chemistry of tomorrow.

[00:20:03] **Susan Kish:** So Remy, one of the interesting things in your background is spending time with the Swiss Parliament on the science side. Can you tell us what was it like to work with politicians and their staffs on these questions? What did you take away from that experience?

[00:20:18] **Remy Buser:** Yeah, sure. So I got the chance to have an opportunity to spend a year at the Swiss Parliament advising politicians on environmental bills.

And this is really a moment that was very key in the kind of foundation of Bloom today. Just because I could see how complex topics like the stability of our climate are discussed on a, on a political level and that's the dimensions of chemistry sometimes left in the background. And this really motivated me to then plug directly technology into basically the company sphere or the entrepreneurship, because I believe that this is the only way we will get technologies to see the light of the day.

And maybe I can add also that it's thanks to my PhD that I managed to get into this role as an advisor, because that was a prerequisite to get access to this opportunity. And that's again where ETH opened doors for my career.

[00:21:28] **Susan Kish:** And do you anticipate that talking to those kind of stakeholders, policy makers, how important is that going to be as you look to the next series of challenges for Bloom?

[00:21:41] **Remy Buser:** So politics is essential. Uh, I mean, in general for, for life, you need frameworks and, and in the climate perspective, it, it's going to play a big role. The thing is a bit that, uh, timelines of politics and the timelines we look at when we look at, uh, climate, uh, very different. So, you know, you, you need to kind of run both at the same time, but, uh, with Bloom, we, we remain very, uh, close to politics on my end by connection to the parliament and, and the people I've met during this year.

And also my co founder is active politically in the region of Lausanne. Thank you. And, and so we stay connected, uh, as much as possible to, to that world, too.

[00:22:30] **Susan Kish:** And at some point you're going to have to expand beyond a Swiss perspective on these questions, right?

[00:22:37] **Remy Buser:** Indeed, and we look at more global aspects and the Green Deal or the Inflation Reduction Acts are good examples of, I would say, larger scale kind of initiatives.

For now, we have less influence as a company, but as we grow, our market is international, so we look at these type of kind of, uh, opportunities for our company to, to evolve and also to shape, uh, a bit regulations that we will need in, in the future.

[00:23:09] **Susan Kish:** Very cool. Remy, thank you. Thank you for explaining this in ways that both leave me to understand, but also leave me optimistic around that ability to, as you said, not necessarily decarbonize, but to de fossilize the, that's all those sectors with the accompanying impact.

So thank you so much.

[00:23:29] **Remy Buser:** Thank you, Susan.

[00:23:31] **Susan Kish:** So, I'm going to close with some questions that we regularly ask our guests. And the first one really is, when you were growing up and a little boy in Geneva, what did you want to be when you were growing up?

[00:23:43] **Remy Buser:** Yeah, I often think about this and, and there are a few things that come to my mind, but I don't remember specifically.

But I, I wanted to be a truck driver at some point, but more for discovering the world in moving around and seeing a lot of, uh, unknown areas, I think was the part that I enjoyed that I was a very little boy at the time, probably very shallow reasoning behind that.

[00:24:16] **Susan Kish:** Seeing the world sounds like a really good goal.

So, and figuring out a mechanism by which to do it. That doesn't sound so simple. What are you as Remy curious about? What are you learning now?

[00:24:29] **Remy Buser:** Lots of things, but I think what this, uh, kind of venture I'm working on now has allowed me to deepen and the curiosity just increased as I entered that field is to just understand how the things are made around us and how little actually we know about this.

And I didn't know much when I started. And I sometimes think I studied chemistry, biochemistry. I spent the first kind of 30 years of my life to just focus on academically study these things. And I have no if you did something else, law or literature. I can imagine if you say the word plastic, what does it really mean is very distant probably of what the reality is behind these chemical kind of elements in your life.

[00:25:31] **Susan Kish:** So it's the how how did it get from whatever to making that bottle of Evian or how did it actually create those? What's that Swiss Yogurt, Emmi?

[00:25:45] **Remy Buser:** Yeah, but just imagine how if you could follow an atom. and see where it came from originally, where it has been transported to, how much processing, and, and you buy a bottle of Evian, you drink it, and then you put it in the PET bin, and you think you have the cycle under control.

And in the end, the kind of, that's the tip of the iceberg, but it's a huge kind of iceberg. Hidden behind, uh, such materials that, as we mentioned, the fruit of hundred year of development and optimization of very complex or not very complex, but very advanced chemistry. Very cool.

[00:26:31] **Susan Kish:** What books are you reading?

What's the, the stack on your bedside table or lined up in your Kindle?

[00:26:37] **Remy Buser:** Yeah, so I'm more into, uh, listening to, uh, to actually podcasts and, um, people that are, are more alive interaction than reading also because I tend to move around uh, a lot and I can do this while I, I move around even on my bike if I want.

And there, uh, you know, I'm a lot into the economist for things that happen in the world on a daily basis. And then I, I follow, uh, people like Jean-Marc Jancovici that you might know, uh, to give one name here that really try to, to leverage science to, uh, educate, uh, people on, uh, how to solve these fundamental developments or, or kind of, uh, climate, uh, uh, crisis, um, that, that we are experiencing now.

[00:27:36] **Susan Kish:** And then finally, when you do go to Zurich, when you cross the Röstigraben, which, for those who might not know that term, Rösti are these wonderful sort of hash browns you have in Switzerland, they're a fabulous thing to eat. And the Röstigraben is the border of the hash browns, because the Swiss Germans eat a lot of it, the French not so much.

Or at least that's how I, can you explain it better than, can you explain the Röstigraben?

[00:28:01] **Remy Buser:** Gráve? Yeah, it's funny, I never pictured it like this. Some people actually think there is a ditch somewhere. I can guarantee that there is no physical boundary there. But I imagined always that there's a ditch and that's full of Rösti, but actually you describe it almost better than I do, uh, I, I look at, it's the end of the Rösti and then the French part that do eat less Rösti starts.

I, I like your picture of it.

[00:28:29] **Susan Kish:** I just, I've had fabulous Rösti in Verbier, so I wanted to be cautious to not say you don't have it on the other side, but there is a, a, a mental or not a physical, but there is definitely lines between the French and the German part of Switzerland. (Remy: "There is!") . So when you cross the Ruch der Gaben, what is your favorite place in Zurich, either at ATH or just around the town?

[00:28:52] **Remy Buser:** Yeah, I think the Hönggerberg, where I spent most of my time, because when you work in the lab, you're there on Saturdays, sometimes Sundays. And I really liked to be at Weid and you have a beautiful view over the whole city with the lake and that's certainly one of the elements I would recall from my time at ETH, but then Zurich has a lot to offer.

And, uh, should it be from general lakeside, uh, China garden or, or, uh, kind of more nightlife, uh, next to the prime tower. Uh, you get a bit, uh, all sides of, of, um, what makes life interesting.

[00:29:37] **Susan Kish:** Excellent. Excellent. Remy, thank you so much for joining us. We really appreciated the conversation and, and now I know a lot more about bio renewables.

And I really appreciate it.

[00:29:49] **Remy Buser:** Thank you for having me, Susan.

[00:29:52] **Susan Kish:** I'm Susan Kish, host of the We Are ETH podcast, telling the stories of the alumni and friends of the ETH Zurich, the Swiss Federal Institute of Technology. ETH regularly ranks amongst the top universities in the world in terms of cutting edge research, science, and the people, the people who were there, the people who are there and the people who will be there.

Please subscribe to this podcast wherever you listen and give us a good rating on Spotify or Apple or YouTube if you enjoyed today's conversation. I'd like to close by thanking our producers at Ellie Media and ETH Alumni and thank you, our audience, for joining us.

Links to topics mentioned in the episode:

- Podcasts of The Economist
- Podcast with Jean-Marc Jancovici