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Project Zion Podcast

Rod Downing 00:01

Welcome to Project Zion Podcast. I'm your host Rod Downing from Vancouver, Canada. This is the series "Climate Brewing", where we interview the world class scientists and other experts who gave presentations as part of the Community of Christ, North American zoom series, "All of Creation, from Crises to Transformation".

Today's topic, "The Circular Economy" is an alternative to our current economic model, which is a linear Create-Use-Discard dynamic that results in ravaged mountains, abusive child labor, abandoned oil wells, and mountains of trash. It considers resources to be endless, waste to be of no consequence, and the implications for nature to be negligible. Thus, today's guest, as part of the diverse voices we need to hear from, is from the industry side of this massive issue. Lugano Kapembwa is from London, United Kingdom, and is currently CEO of Loop Cycle. He will share his vision of this alternative model, the Circular Economy. Please note, there will be a separate podcast on the related economic topic of Consumerism.

Before proceeding with his introduction, a word of transparency. I met Lugano through a niece who lives in the UK. They've been together for years now. But as I came to understand what he did, I realized the world class significance to his work, and that is why I invited him. So I'll briefly share two aspects of his background and what he brings today.

Lugano has spent over 20 years grappling with environmental issues. His biggest project was as Energy and Environmental Lead for the 5 billion - that's with a B billion - dollar Canary Wharf project in London, UK, which basically created a 100,000-person city within the city of London. The eco. significance is that many environmental groups have developed a focus on cities. Why? Well, where do most people live? In cities. Most industry? In cities. It's also where politicians are closest. It can still be gnarly, but can be nimble and very potent. And Lu has faced both ends, envisioning what can be, given a new city, but also the complex dynamics of dealing with an old established city like London. So I'd love to sit at Luke's feet and hear all his insights. Today, we'll simply get a glimpse.

The second aspect is the main one. Lugano then took those insights from his previous years and co-founded Loop Cycle, of which he is now CEO. Its purpose, in essence, is to create the cyclical economy. I am thrilled at this. In essence today, we have a front row seat at the cutting edge of a brand new mode of dynamics. In the big picture, there is no cyclical economy yet. Lu is helping to create it right now. So I am greatly anticipating his sharing of the insights and struggles of helping create such a new better mode of economic dynamics. To me, this is a rare treat to be at this hinge point, listening to one of the key people determined to create this fundamental change in our economics. So a very genuine thank you, Lugano, for taking this time to share with us today!

Lugano 04:44

Hello Rod, great to be here. Thank you for having me.

Rod Downing 04:47

Yes, and I'm thrilled that you were able to find the time to share with us. Now I was quite curious in thinking about this, wondering, before we get into the real details of this issue, what were the influences that made you to decide to study environmental issues in the first place?

Lugano 05:18

It's a good question. Going back now, many, many years, environmental science was actually something very new. And when I, when I went to study at university, I became interested in environmental issues as part of actually, biology modules, where at the time, environmental science, environmental issues were either included in biology, or included in geography, but not really a standalone degree subject. And I was at the university, I studied my undergrad, which was Leeds, and I was think I was one of the, we were one of the first groups studying environmental science as a degree because there, you know, there weren't really many degree courses focused on the subjects, you know, exclusively. So, I studied it thinking, and I hedged my bets as well, on the future, I studied it thinking that this is going to be something that's going to be really significant in the future. I, I was concerned about environmental issues, I always have been. But I just felt like this could be quite useful. And I guess, I guess I was proved right, in the long term, which, you know, is, is good in one way but bad in another. So. So it's, you know, so that's kind of, that's kind of my history studying the subject.

Rod Downing 06:45

Great. Some of that sort of background motivation, would that be because you love the outdoors? Or was it more just you saw the impending problems that were coming up?

Lugano 07:04

Um, you know, my interest has always been in, I'm fascinated by systems. And that's always been something that interests me – systems - the different actors and levers that are within a system that make it work. Whether it's, you know, whether it's environmental, whether it's mechanical, I've always been very, very interested in in how things work at a more systemic level, and environmental science, sustainability, climate change, whatever you want to call it these days, it is all about a system and how a system works, and how individual levers either work together or against each other, to drive change in that system. So environmental science and learning about climate change, I think the very first time I learned about it, it was about how the weather changes are driven by rising sea levels, and that kind of connection that you would never grasp, straight away, actually, really kind of in terms of a system and how it all is connected, actually fascinated me. And that is where my interest initially stemmed from, it stemmed from more of the systemic, and process that kind of really interests me.

Rod Downing 08:24

Well, that's, that's, that's interesting. It sounds like you're, you're ready-made for this stuff! Anyway, thanks for sharing that.

Now, in our climate series, we've made the distinction between individual actions we can take and the huge systemic or structural issues. And in particular, we identified the two systemic issues: the economic system, which is what we're dealing with today, and as well there is the political structures

and issues. I already mentioned that our current economic one is a create-make-discard linear system, where each stage takes energy, producing CO2, and then we discard whatever it is, and start all over. And thus, you know, we end up where we are today with this build-up of all these greenhouse gases. So can you describe this alternative, specifically, the Circular Economy, maybe using an example or whatever, just give us a sense of the difference here.

Lugano 09:48

Right. So at the most basic level, a Circular Economy is one where absolutely nothing is wasted and the system is in essence regenerative. So the products that come out of different processes within that system are then used directly to fuel new systems and new processes. And that could either be going right back to the very beginning of your supply chain, or actually fueling other supply chains. But essentially, the losses or the waste products that are generated from these various processes are actually eliminated. So I guess to sum it up in one word, it is an economy where nothing actually is wasted, and everything has a value. And I think that's probably the most basic, the most basic way you can kind of describe it, I think.

Rod Downing 10:45

Right. It's, you know, in my small world, it sounds somewhat like recycling, except, you know, gone big time, and, and hopefully global. Is there a distinction you would make, between, you know, my sort of concept of just putting my recycling stuff out every week and what you're dealing with?

Lugano 11:24

Yeah, absolutely, I think, I think it's funny, because when we first talk about a Circular Economy, the first thing people talk about is waste, and what to do with waste. However, if you think about a Circular Economy, it is if we go back to that idea of a system and systemic thinking, a Circular Economy begins the moment something is required to create something. So it actually goes right back up the value chain. Because a Circular Economy is how is, is where you consider what you're designing, how you're producing it, how it's being used. And if you're managing all of these parts, that actually what comes out at the end, is something that can, that isn't waste. What it is, is something that can be fuel, either to go straight back into that supply chain, into that chain, or straight into something brand new. I think, when we talk about recycling, recycling is almost, if you think about it, it's almost too late. Recycling is when you have a problem, when the waste is that, you have a product and you need to do something with it at the end. And so I think the key distinction is that when we talk about the Circular Economy, it affects every single point in the supply chain, the value chain of a product, from the moment it's, the moment it's conceived in terms of its design, you're thinking about how these materials, how all these ingredients are going to be used, put together, and then even deconstructed so they can be used again. And so I think that's probably the key distinction to make.

Rod Downing 13:11

Great, yeah, no, that's, that's good. That gets me out of my little world of, I mean, important, but recycling, but still, this is much bigger. Now in our actual session that took place in June, and, and for any of the listeners, there should be a link, but you can go to our website and listen to Lugano's June presentation, which was, which was fabulous. But during that presentation, and this is sort of at the other end - if recycling I haven't quite gotten right, then at the beginning end, someone mentioned the

idea of well, where does the notion of, you know, the environment has its three R's, and the first one is 'Reduce'. So how does that, can you briefly just share for perspective where that sort of sits in in all of this?

Lugano 14:28

Which, yeah, reduction for me is the ultimate action. You know, we are by nature, you know, you talked very much about this Take-Make-Waste society, this linear society that we live in. Where we just assume we if we want more, we'll just use more. Ultimately, we will require less in terms of energy, in terms of space, and in terms of waste management processes if we actually just reduce how much we use in the first place. And I think when we talk about 'reduce', when we bring in that element of the Circular Economy, what also must be included in that is the quality of what you're using as well. So if you're reducing, but also you are using higher quality materials that can be, as you mentioned before, recycled more than once and continuously reused to create new products, that actually, that's when you really start to tackle the problem at a fundamental level. So I believe 'reduces' is always going to be if you don't use it in the first place, you're almost avoiding a problem. But that also needs to be considered in light of what you actually use, the residual amount that you have to use, and the quality of that material and the impact that that material has, in terms of what went into it to produce it. But also, what comes out at the end as an inverted commons waste product.

Rod Downing 16:12

Great.. Yeah. Thanks for that clarification. So let's, let's then get in to some of those insights. As I mentioned, you spent some of your years with this massive Canary Wharf project. I mean, you didn't design, you didn't design the project, but you were the environmental lead. That would be another interesting topic, if you could have designed it, what would you have designed, but we're not going there today. But nonetheless, you were the environmental lead in this massive project. And so I'm, I'm curious if you could share the lessons that you learned from Canary Wharf? That then you later, either are bringing or hope to bring into Loop Cycle to continue or making, make this a more Circular Economy?

Lugano 17:23

Yeah, sure. And God knows, there were many things anything's learned. So I think I think if I could, and it's a great question about, you know, what I do differently? I think that's, that's another podcast in itself, I think. You know, I think that if I could distill it down into maybe two or three key points, I think the first was, you have a lot of companies operating in one space, using shared resources, shared systems. And as the estate landlord, you have to bring all of that together, and make sure that all of these actions can happen in one place. And a big part of that, when we first started grappling with this idea of, you know, what does a really sustainable estate look like? What does? What does waste management practice best practice look like? We have to start getting people using common data

People measure different things in different ways. And companies are measuring different things in different ways. So how can you start to standardize how people are looking at things and how they're measuring them. If you can do that, then you can start benchmarking. And then you can start getting people and but when I say people, I mean companies speaking a common language around a common set of metrics. And that actually is really a really good starting point to start improving performance

So for me, and it goes back to that old saying, you can't manage what you don't properly measure. I think I would add to that you, you can't properly manage what you can't measure consistently and evenly. And so I think, you know, for me, the need to get everybody on a level playing field with regards to the information and the data and how they analyze that is, was key.

Secondly, and this is to be totally honest, it's a cliché term, but I think it's just as real now as it is for pretty much any time you're going to hear it during COP26 is collaboration. You have companies that traditionally would not interact with each other and now talking about sustainability issues, about energy issues, about waste management, and that's, that was a huge step forward. So being able to create a space a safe space where companies can discuss their problems, discuss the challenges and realize that challenges are actually quite common, and then start to collaborate to solve those challenges. And I think was a real achievement for an estate of such a size.

And I would say, probably the third thing I would add is an openness about where you are in your journey, I believe we were keen to tell the whole story. You know, what you have in this era, at the moment is, you know, everybody, right down to the individual level on social media, everyone wants to present their best face. You know, people often don't, the real learning comes from what hasn't worked, and what could be improved. And I think we committed to a journey where we would actually be open and honest about where we were in the process and what the challenges were for us as a business. And I think, any business that can do that, that builds integrity, that builds trust, and actually builds it builds a basis from which you can actually improve on and, and communicate that journey. And I think those probably were the key things, you know, that I learnt working in that estate in that environment over my time there.

Rod Downing 21:26

Yes, that that's, that's interesting to think of, you sort of alluded to that, that failure, and, you know, the whip, first of all willingness to try, but wherein you can create an environment where failure isn't seen as something awful, but simply seen as a lesson. I mean, that sounds like yes, definitely a wonderfully collaborative situation.

I wonder if you could just expand on that a little maybe using and just try and allow me to get in my head, you know, a bit of an example of all the partners that would be involved in, you know, whether it's a plastic bottle or a stove, or a heating element or something else. In your session, I remember you had this, this diagram with, my gosh, I couldn't believe all the players. Now, we have, I think, with this pandemic, a little better sense of, quote, this supply chain management, this has become, you know, a word that was never used, it is now mainstream, everyone knows about supply chains, and all the issue, or, you know, we recognize how they can get bottlenecked, and, and there's all kinds of different players in that. So I was wondering if you could just give some, some example of at least some of the players when you're talking about this collaboration, that you had to deal with? If, you know - sometimes I can never think of a good example - so if you can't, that's fine. But if you can, maybe could just briefly share that.

Lugano 23:53

I would say so for example, when you are managing an estate, there are a number of service providers. And in terms of when we talk about collaboration, if you think about it, you know, you also touched on the point about openness and transparency and where you are in the journey. Everybody in that supply chain is on a journey. Nobody's got it entirely figured out. And any company that tells you that they have is greenwashing or we wouldn't be in this problem if that was the case.

And so, for me, it is about you know, we had, for example, service providers who specialize in delivering certain services, be it estate cleaning, be it waste management. All of these companies were also learning how to do things better, deliver better service to their clients of which we were one. And a big part of that is sustainability performance, helping us to improve. So there was a collaborative dynamic. And I would say it was a challenge, it was challenging and collaborative. But I mean that in the most positive way, with the service providers, because the service providers have the advantage of bringing in best practice, and ideas that they have from outside of Canary Wharf, outside of our business, they could bring that in, and actually use, you know, almost cross fertilize those ideas and see what could work on our estate. So there was that kind of collaborative, informative and challenging dynamic between ourselves and the service provider.

I would also say, the supplier of equipment, equipment products, as an estate, the benefit that we had as an estate is that it was a closed private estate. So there was more control. For example, the City of London, traffic goes in and out. And it's pretty much uncontrolled. Whereas this, you know, you're working in this estate, where actually, it's private, it can be locked down in a second. And what that means is that you have greater control over what comes in as well as what goes out.

So how can you use that as a lever to start opening a dialogue with both companies that are providing products onto your estate? And what I mean by that is, for example, if you're delivering tons of IT equipment, and hundreds or 1000s of kilos of IT equipment? And how can you make sure that actually is delivered in less packaging? Or how can you make sure that actually some of these products that come on to this estate that will be waste products actually are taken away, and once they're no longer needed, how can you be involved in that process?

These are things that to be totally honest, we explored, but you can't always deliver at the pace that you want to deliver them in. And we recognize the potential of the estate to actually have this kind of impact. But it wasn't something that really could have been done in a short space of time, because it's a culture change as much as it is a process change as well. So you've got this kind of suppliers of the goods and products, you've got the suppliers of the services. And then of course, you have the actual people who are on the estates. And I talk about, when I say that I refer to the companies themselves, who you build a long-term relationship with. And that relationship is built on trust as well, because a lot of the services that they deploy, are actually commissioned by yourself centrally, especially things like waste management. And then at the most fundamental level, there are other people who are on this estate. And those people were at the forefront, a lot of the sustainable development of the sustainability policy on the estate, because we realized how engaged they were.

And we realized how engaged they were when we were bold enough to start putting messages out there. I think, whenever you are saying, you know, this is what we stand for, this is where we want to

go, there is always that kind of apprehension about how it will be received. But I think there was a real pleasant surprise, when you realize actually, the people who come here are really engaged in what you're trying to do. And not only are they engaged in terms of they're willing to listen. But actually they proposed ideas, they took part in questionnaires. And a World Environment Day, they participated in a large survey about things that we should be tackling on the estate. So you know, and so they are really the as you mentioned before the individual level, they were catalysts for that change. And they validated a lot of things that we were doing to say actually, this is relevant. So I think they are kind of the ultimate stakeholder. They were the ultimate stakeholder in the estate. So there's all these kinds of different levels. And each one, you need to interact with them in a different way. And the nature of the relationship is a little bit different, but I hope I've kind of summed up the key interactions that went on between all the different stakeholders.

Rod Downing 29:42

Right. Yes, great, thanks. I wanted to then just take a look at your work with Loop Cycle itself, which, pardon me if I got this all wrong, is an attempt to be able to take an individual item and track it through this circular, or circularity journey. And I just think back to an example of my own: years ago, I remember we had this old stove. And you know, it stopped working. So we call, you know, you just called in this supplier, he came in and tinkered around and fixed it, and, and our stove was working again. You know, you could just take a stovetop element, you could just yank it out, stick a new one in, and, or whatever. Today, it seems a lot of things are made to you know, there is no stovetop element there, you know, they're nice, flashy, smooth surfaces and things like that. If you, you know, if anything goes, basically the whole stove has to get replaced, because it's, it's, it's so integrated. It raises a couple of questions, and I'm curious, what your thinking is, in regard to Loop Cycle itself. In that situation, would you be advocating for going back to more modular-like systems? And then would you basically track that stove? And okay, you know, in in the year 2000, and whatever, this this thing, got, this piece got replaced, and in the year, whatever, so that, you know, that stove would keep circulating, and just its pieces would, would keep changing? Is that part of the kind of the cycle of Loop Cycle? Am I getting that right at all?

Lugano 32:32

And yes, you are, and you are, that's, that's, that's pretty much the essence of what we have, what Loop Cycle is, and we are a product traceability platform. And our, you know, the basic starting point is that, you know, if you if something doesn't have a lasting value, or lasting identity, then it's, at some point, part of it, or all of it will be forgotten. And that is where waste comes into the equation. So what we allow for is manufacturers to trace products, and there's their circumstances. And you know, when we talk about consumerism, a manufacturer, in many cases, in a B2B, and in a B2B value chain and B2B market, the manufacturer is going to want to sell a product as quickly as possible,

Rod Downing 33:26

they will do it through sorry, B2B is . . .

33:30

“business to business” Beg your pardon. Yes, so manufacturers selling a product to another business is going to want to do so through a number of intermediaries who can distribute that product and make

sure it reaches those customers as quickly as possible. And then you realize that the manufacturer doesn't actually know who they've sold that product into, because it's gone through this distribution network.

So there is pressure on manufacturers to recycle more. They talk about the Circular Economy, but the question is, how do you know? Because you can't actually, you don't actually know where your products go. So how can you recover them? So there is that element, there is that opportunity that's unlocked for products at the end of their life, to be recovered back by the manufacturer and recycled, refurbished, whatever you want to call it, but actually used again in some form.

But as you said, there is this idea that modular production where a product can be tracked as a product, but the individual sub components of that product can also have a unique identifier, and therefore they can be stripped out, replaced, and what you build up through the platform is essentially a service history of how that product has been used, how that product has been cared for, over his whole lifetime. Loop Cycle builds that as a log. And therefore when that product is no longer needed by that particular operator of that product, if there is life in the product, and they want to sell it as a second life good, it's exactly like the car industry - you would be less likely to buy a car where you have no idea of the service history. Because you don't know how it's been serviced, you don't know how it's been maintained, and instantly the value plummets because of that. And yet, we expect quite valuable secondhand manufactured goods to just be for another operator, to just want to buy it without that service history. So these products that have been designed in a modular way where they can be opened up and parts replaced out, actually have an advantage through a platform like Loop Cycle, because what it allows is for all of these changes, tweaks, adjustments over time, to be tracked and traced, and then that gives assurance to the next owner of that product, about how that product has been maintained over his life.

Rod Downing 36:08

Yes, and it's funny, I was just thinking of the car example as, as exactly what, you know, I would be, or when I go and buy, or if I went to buy a used car, that's exactly what I would want is, you know, give me give me the history of, of what was this car's gone through. And, and in fact, just the other day on the radio, I heard of, this had to do with consumer electronics, computers. I won't name the company, but they also do refurbished versions. And some investigative work, went and asked some of the employees, would you ever buy any of those refurbished products? And they said, not in your life? Because, you know, but all of that, and that's a problem. It's hidden, nobody knows. So yes, to be able to, and so, you know, that whole potential of, for instance, cell phones that, you know, people want always the latest set, you know, cell phones, and they're, you know, you can go up on the web and see these, like, 20 foot mountains of used cell phones that people have discarded, that would be perfectly usable. But there's no assurance of what they are, and so nobody wants to buy them and things like that. So I can see the real potential of this Circular Economy that goes back to, you know, some of your key words, trust, you know, that that to me is what was, boy, my ears really picked up on that. If you can get a system of trust in place, that makes that world of difference where I would consider either that used car, or I'd feel satisfied, that I'm getting what I'm, what they say I'm getting, or that's, you know, that cell phone I'd consider that. Whereas now, yes, people – whoa - you know, you have no idea.

Lugano 38:37

You're absolutely right, Rod, its integrity is a real problem for manufactured Second Life markets for manufactured goods. And COVID has thrown up a, unfortunately, many outlets, especially in the hospitality sector, had to close which meant there was this abundance of valuable, Second Life kit that wasn't actually that old in a number of places, from commercial building premises, to restaurants to hotels. And what you found actually, is that companies are paying to remove these products, rather than actually selling them on a secondhand goods. And because of this lack of integrity, the manufacturer hears about a product that they have, that's out there, and it's a second life good, but they have no idea what's happened to it. They have no idea how it's been treated. So really, there is this fear that if I sell you a product, and that product explodes, you won't turn around and say "Lugano sold me a rubbish product", what you would say is I bought a product it was manufactured by X and it didn't work after a week.

So one of the things that Loop Cycle offers is an opportunity, because it's a lasting touch point between the manufacturer and the operator, it's an opportunity for the manufacturer to actually take a more active role in the management of that product over its life. So if the parts that are replaced are manufacture assured parts, if the manufacturer conducts an industry standard servicing on that product every two years, and there's a log of all of this detail, the manufacturer then has more confidence in the Second Life potential of that good. And also, you start to just build this integrity in the Second Life market, because the way the product has been maintained, is just to a higher standard. And that really is, really is the kind of the place we want to take this and where the platform can actually really drive the onward value, the onward use of these products.

Rod Downing 41:06

Right. Yes, exactly. So it's, it's the type of situation where, Boy, I sure, I sure hope for your success. I mean, apart from just for you, but yes, this could, you know, if this could be a system that could be trusted, and yeah, build that trust and, as you say, integrity and confidence. Yeah, it really does open up the possibilities that simply aren't there. One of the questions is, that came up is: so a company that invests in this Circular Economy, the question was raised, whether the market mechanism is going to be good enough in itself, or whether you think there's going to be regulation needed to either kick start or help expand it, or to help ensure that that sense of integrity? Where do you see that sort of dividing line or issue?

Lugano 42:57

Um, it's a very good question. And I see it as if you can imagine, you know, when you look at the expected academic results, for example, from universities, or A-levels, etc., it follows this kind of bell curve where most of the big, you expect most people to be in the middle, and you expect a few people to be on one side, and a few really, really smart people to be right at the other side. And I see the same thing with regards to the different levers and mechanisms that are required to actually drive change throughout the whole industry. I think you get those companies who are always going to be leaders, and they're always going to be early adopters. And for a lot of these companies, they will see benefits, they will see reputational benefits, which is very much also linked to the value of companies these days.

But also they'll see more practical benefits, like if a product is better maintained, and chances are, it won't break down so much. So they will save time, they will save money, they will be able to recover products, end of life and gain revenue. There'll be all of these different mechanisms that build up over time to provide a big collective benefit.

But then there'll be those companies to be honest, that will resist change for as long as they can because it's comfortable. And you know, actually they're more led by risk than opportunity. And therefore their first instinct is to stay put in their space and not really do much. And actually incentives like legislation are going to be needed to push these companies. Unfortunately, I believe a lot of these companies will form the bulk of that bell curve.

So with that in mind, I believe legislation is going to play huge role. But that said, while I think things like extended producer responsibility, companies taking more responsibility for the waste products that they generate, are going to drive things like potentially better design products being used in the first place. And that may take a little bit more time.

But I do think that even when this legislation kicks in, and companies start to have to adjust and make changes to meet this legislation, those companies that did it willingly, and did it because they thought it makes business sense, we'll always have an advantage because it's a cultural, it's a cultural adaptation, rather than an adaptation to conform. And I think that will always be a more sustainable, a sustainable way forward. So I think legislation will drive the masses, and but those companies that have taken it up are probably seeing a range of benefits that will make them more competitive.

Rod Downing 46:05

Right, yes. Great. Yes, very helpful for someone like me, who's not responsible for some business, to see just the innate benefits of going with this system. And, and wow, yes, I sure hope it spreads. And I guess that's a quick question. We're sort of getting to the end of our time here. Where are we, you know, just in the most general sense, in terms of this Circular Economy, and companies waking up, and, and wanting to adopt things or looking for companies like Loop Cycle that they can hook into, for that type of thing? Where are we in this?

Lugano 47:06

I'm going to be as optimistic as I usually am. I think we're a long way off. I really do. I think that there are, I think there is a lot of understanding that needs to happen before companies feel comfortable actually driving change themselves. You know, when we look at even, you know, even off the top of my head, I've got climate change, I've got net zero carbon, I've got Circular Economy, I've got sustainability. We've talked about recycling.

I believe companies are, it's a challenge for many of them, because they know they have to do something, but they need to actually understand: (a) what it means and, (b) what it means to their business and their industry. And I think that there, there needs to be a process through which these companies really grapple with what it means. And then actually look at tackling the problem.

And going back to that word: at a systemic level, rather than something rather than very small actions, that that show they're doing something but really don't have a large impact. And I think that takes change, that takes change, and it takes commitment, that commitment can be in terms of resources that are required internally to make that change. It could be financial commitment to change something. But it's that vicious circle, that vicious cycle, because that commitment won't be made until they understand what they're committing to.

So I believe there is a really long way to go. And unfortunately, we have to do it in a really short period of time. But in all things I believe that the companies that are making progress, are the companies that just started somewhere, started somewhere. I said, we're now committing to this process, we are going to learn and adapt and evolve as quickly as we can, using the insight that we gained from the things that we're trying. And they're setting bold ambitions, that they may not necessarily know the way how to get there yet, but actually, they're drawing their marker in the sand, they're saying this is where we need to be, and then they're going to figure that out. And I think that there's not a lot of companies that are there yet, in my opinion, I think that there is, we were woken up to it now and I hope pace will accelerate. But at the moment I still feel that there was still a long way to go.

Rod Downing 49:52

Right. Well, I mean as we are with just about any issue dealing with climate change and, you know, these Systemic issues - the economic and the political - Oh, they're so entrenched and so difficult to overcome. I can't imagine any of that happens quickly. But it's, it's just wonderful to see someone like you and your company and your former insights and things like that are here, are working tirelessly to help sort-of expedite this. Because, boy, yes, we need that.

Now, before I close, I just want to give opportunity if there's anything else you felt you'd like to share. Otherwise, yeah, we'll bring this to a close.

Lugano 51:04

I'll put it in. Thanks for and I think, yeah, no, this has been really insightful for me. And one thing that I'm learning is that, you know, these challenges are, are very similar, regardless of where we are in the planet. And we are learning that we're now part of the, called Global Incubator Program, within an organization, a government organization in the UK called Innovate UK, and we are collaborating with Mars. And they are a research establishment innovation and technology establishment based in Toronto. So we're actively working with cross-collaboration between the UK and Canada, to look at these opportunities, and where we can support Canadian businesses as well. So really, for me, it's interested in having a dialogue and learning more about how Canada and North America are addressing these challenges to see what: (a) we can take back to the UK; and (b) where we can assist as well. So it is an exciting time for our business. And just thank you for, for giving us a platform to also talk about us and also to me to share my experiences as well.

Rod Downing 52:23

Well, I really appreciate that. And that's, in another circle, it's sort of, that sort of brings us full circle, again, there's, there's collaboration again, you know, at this global level, which is so critical to address these systemic issues. So, to me that I mean that that's sounding wonderful. And yes, for sure, wish

you every success in this, along with what other positive dynamics are taking place. So I, again, and so appreciative of your of your time, because it's, you know, this series has had a lot of people in academics. Now these have all been people, they aren't Ivory Tower, academics, they've gotten their hands dirty, you know, they're very much involved in things.

But we also need, you know, different perspectives. And this, you've just, to me, been so helpful in giving sort of an industry voice perspective to this, which I find you know, that's where sort-of the "rubber meets the road" and is so critical for you know, to get a handle of where the opportunities are, and where things currently are.

So I want to thank you again for taking this time, which I'm sure you're just crazy busy, when you're trying to, you know, create a whole new industry. My gosh, that's quite an endeavor. But sure, glad way back in those university days you made that decision. Thank heavens for people like you. So again, Lugano, thank you very much for being part of this series.

And for the audience: again, he did give a session in our main series. You can go up to our web and that session is archived and you can take a look at that. All I know is that as this conversation was going, there were phrases and sentences that I just wanted to dig into but couldn't. So that session may help fill out some of that. But again, it being a systemic issue, it is simply enormous. And I'm so grateful for people like you, Lugano, who are helping us move in the right direction. So again, thanks very much and wish you every success.

Lugano 55:32

Thank you, Rod, thank you very much.