

CONTEXT: Interviews conducted as part of an investigation into the barriers to, and opportunities for, achieving Circular Synthetics. Research was funded by Business of Fashion, Textiles and Technology Creative Research & Development Partnership (BFTT CRDP—£5.5 million) led by the University of the Arts London, part of the UK Creative Industries Clusters Programme (CICP) funded by the Industrial Strategy Challenge Fund, and delivered by the Arts and Humanities Research Council (AHRC) on behalf of UK Research and Innovation.

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Interviewee: Co-founder, material waste diversion service provider

1: Interviewer

2: Interviewee

1: Can you tell me a little bit about the background of [redacted], and also your role within that story?

2: I'm the co-founder of [redacted]. I joined shortly after we got awarded the [redacted]. I was working a little bit with her before that, but on my own project. We were thinking of working together, and then ended up doing more and more and more stuff around [laughing]

My main role is within the recycling network, building up the recycling network, onboarding recyclers, and getting the insights of their needs and requirements, and how we should be supporting them during their scaling and in their sourcing of the textiles to make their processes as efficient-- Basically, their life is as easier as they can be so they can be as profitable as possible so we can get the rollout that we need.

I also work a lot on our consultation. The company's a little bit split into two. We do waste-mapping surveys on waste flow. We've done that for very large global fast fashion brands across the whole supply chain, 14 countries.

We also do that at country level. We work with organizations like [redacted], where we carry out these waste mappings at country level to give an overview of what's going on, what are the volumes, what are their compositions, what's the waste handling situation, the infrastructure, and then a very much for clarity like what types of technologies, what kind of pilots support could be set up, and setting designing pilots to push forward the circular activities in the country.

From that, we created a very good large databases, information on post-industrial textile waste flows. From the research that we've done over the years, we've also got a pretty good idea now of how much waste is made from most processes within the textile supply chain. We can make pretty good assumptions on how much waste is being created by different facilities.

Slight hauls are done, mainly research with posts with fast fashion, the more high-street level. We haven't done so much with luxury. We've had various conversations. We've had assumptions and ideas around that, and a little bit of information for the database in terms of luxury isn't quite as extensive as it is for mid and low-end production. That's my role within the company, what we do.

Interview Date 22 05 2020

1: Okay, perfect. A couple of questions on a couple of things that you raised there. When you say, recyclers, what kind of recyclers are you talking about? Do you mean mechanical and chemical and recyclers already in operation, or ones in R&D phase?

2: Basically, we said, because it's a very broad term, and it's a really bad term, because it's anybody who buys textile waste as a feedstock, and that can be even like a company who just have a spinning facility.

It's very loose term that we use, but it comes as everybody from industrial symbiosis, so nonwovens to automotive industries, and installation panels, and so on. It also covers chemical recyclers, mechanical recyclers, high-end, low-end, anybody. Anybody can buy textile waste from.

1: You mentioned your waste mapping. Is that an opensource resource, or is that something that feeds into your customers' information? How is that acceptable or used?

2: It's not opensource. We are quite open with the data we collect. We try and share that out as much as possible, but it's also how we're growing the company and supporting ourselves.

The main part of our organization is the platform and setting up these supply chains between working with factories, setting up waste segregation in the factories, and then linking those waste streams, textile at this stage, with recyclers or buyers of textile waste, and setting that up with traceability and complete background information on that textile, and reducing the amount of middlemen between the factory and the recycler, so bringing down costs, whilst also increasing the quality, reducing the contamination, and also by giving that background data, what the chemical history is, what the dye process might be.

Depending on different recycling companies and processes different information is needed. It's really depending on what the needed information is what we attach to it within the factory.

1: Is the value mainly with one end or the other, or is it distributed? Is the value mainly with the recyclers, or of your offer?

2: Of the platform?

1: Yes.

2: What do you mean in terms of value?

1: I mean who benefits the most from having your company involved? Is it mostly the recyclers, or is it--?

2: No.

1: No.

2: It's not. It's a win-win-win. The factories can earn more money from their waste. They can also get the opportunities to link up that waste and have the opportunity to buy it back, and a better connection with the recycling world out there, which is a little bit disjointed at the moment.

Also, we get some information fed into Higgs reporting and various other different reporting all in a nice bit of marketing for their brands to say how well they're doing.

Interview Date 22 05 2020

The waste-handlers benefit because if they get less contamination, they know from the first time exactly what it is that they're picking up. They also know often, if they're working with us, we have a good background they basically get cleaner waste. Often, traders, waste-handlers say that they have between 10 to 40% of the bags they can get can be full of stuff that they just can't find use cases for it. Either it's got loads of dust that's the sweepings from the floor, or it's just unidentifiable and too low a quality to find use cases.

We increase the [unintelligible 00:12:30] to the input to materials, they can increase their output value, if you see what I mean. Also, what we can do is we can help them grow and scale their company. If we bring to them and say, "Look, in factory X, Y, and Z can you pick up this, this, this in the textile and send it to this company," so they become service providers for the circa supply chain whilst maintaining the traceability and the flow of waste, which normally now typically flows through quite informal networks.

1: It's a minefield, actually. It's fantastic that you're involved in that instead of remedying that. Just to move on to his question-- I'm sorry.

2: The main part of our business is really is disrupting the waste-handling systems in factories, and the network afterwards. That's really what our company is about, and where we add value.

1: Perfect. Information flow is really interesting. It's something which we're looking at across the material life cycle not just with post-industrial, but also with post-consumer. The power of that information flow, if it was to be properly managed, would be amazing.

2: Yes. Fundamental for efficient recycling; fundamental.

1: That's fantastic. I'm going to start talking specifically, or ask you to start talking specifically about synthetics, if that's possible. You may not have anything specific about synthetics, but I'm throwing that in there because I'd like that to be the focus, if possible. What have your experiences been of dealing with synthetic textiles within your business?

2: We have, at the beginning, started on cotton because that was the easiest place to start. We are still in startup mode. It's been the main focus of our business. However, we've done a lot of research into synthetics and beginning to set up our network of synthetic recyclers of various qualities. What was the question again? Sorry.

1: You answered the question. That's fine. I was just wondering then, following on from that, what kind of recyclers are you dealing with synthetics do you think? Where do you think currently?

2: From anything. From mechanical into really low-grade PET pellets for really low-grade use cases, to emerging chemical recyclers for virgin-grade PET.

1: For example, a pilot plant for a chemical recycler could source material using it?

2: Yes.

1: Okay, perfect. You're obviously working at different grades and levels of recycling. Would you in the future, or are you already, making a value judgment about where you think materials could go to whom, or is the aim mainly just to get the materials reused or recycled?

2: It's a really good comment because yes, we aren't. At the moment, it's more just finding a use case. If it can be in the right location and we can make that trade work, then that's a

victory. In the future, we see our role as fundamentally directing various waste types to our profiles to the highest use case, so making sure that the waste coming through our platform, high-quality waste does not end up in low-quality recycling values.

That's something that is not really relevant at the-- no, it's very relevant, but it's not really applicable. It's not really actionable at the moment, but in the future, that's definitely something that we will be working with. Also, it makes economic sense. The higher the grade, the higher the value that you have.

I also wanted to just mention as well that the other stakeholder that benefits from this information flow from factory to through waste-handler to recycle is also the brand. We feed back that information to the brand. Other users as well, organizations like [redacted], and others as well. We've identified about 10 different users of the information that we will gather.

1: Perfect. I suppose the brands are really relevant in this case; not more so, but they stand out in a way with the kind of waste that you're dealing with because it's post-industrial. There isn't really, apart from the consumer wanting recycled material because it fits in with their lifestyle or their ethics, they don't have the same involvement as they would with the post-consumer waste in a sense, do they?

2: Yes.

1: It's quite interesting.

2: We focus on post-industrial. We don't say that we will only work in post-industrial, but for us, it's the low-hanging fruit. That's why we focus upon it. It's been a- mild would not be the right word to use- annoyance that there's been so much focus on post-consumer waste. I'm definitely not against setting up the collection systems and the infrastructure; believe that is important, but at the same time, the easiest place to start is with industrial waste.

1: Yes, I get that. That's what I'm hearing from other people as well. That's great. What would you say are the barriers at the moment for collecting and redistributing the synthetic textile waste? If you can comment specifically on synthetic, then that would be fantastic because it sounds like you haven't done not so much until recently.

2: No, I can answer these questions as synthetics. What we see in terms of synthetics is that it goes into very, very low value use cases. Yes, there are companies recycling synthetic waste for a multitude of different functions. 100% polyester that's probably getting recycled.

The problem is you have, is because you don't have the segregation of textiles in factories, what happens is the textiles just get mixed together and then it's the job of the-- I'm talking mainly in Asia here, and in Europe of course, but, of course, synthetic textiles aren't so widely used so much in Europe as the Asian countries. It all, basically, as a general rule of thumb, textiles get mixed together. Local waste-handler or trader picks them up, and then they have to decipher what is what.

The current system is touch and burn. If you have a cotton, you can burn it. It burns differently if it's cotton plant. Polyester, it's 100%, or 90%, or 80%, there's no way of knowing. Traders and waste-handlers do a pretty exceptionally good job. They are really good at it, at telling what is what. It's pretty impressive. However, it is touch and burn.

There's room for human error here, and there is a lot of error. A big problem that a lot of the low-end users of PET waste don't use textile feedstock, because it's just not reliable enough

Interview Date 22 05 2020

on scale. There's too much contamination. You're not always getting 100%. Also, on the background data on it, the dye processing, the treatments, the coatings, all of this stuff, because if you're potentially melting it, if you just mechanically recycle it at the low end, it all has impacts on it, so they have to do tests on the types of PET that's coming in, which costs them money.

The whole infrastructure around it is just not supporting it being recycled. Although we do see use cases, and it does go into stuffings, and nonwovens and so on, and the needle-punch fabric, and things like that, it's still, to me, not clear where a lot of PET goes, especially blended PET goes. I see the volumes being created, and I just don't see as much use cases for it. To me, that is, cotton-rich ways mainly finds better use cases, I believe, than synthetic rich blends.

1: That's interesting. Do you think that maybe it's hidden in the fabrics? People are just not noticing that it's synthetic, or it's just because it's not- people don't see the value in it, they discard it or they, sorry, they send it to a landfill or incineration?

2: There's just not, respective with the last thing. synthetics were the blends of [unintelligible 00:22:57], they have just very little uses. There's just not enough buyers out there for it in relation to the amount being used. [crosstalk]

1: Sorry. When you say that you don't see it, or you don't know where it goes, do you mean that it's just not being collected?

2: No. It's being collected, and then it disappears into a big grey unknown box of- who knows what happens to them? Realistically, it's being landfilled; it's being burnt.

1: Incinerated, yes. That's perfect. Just to go back a second, just to where you were talking about how at the factories, for example, when there's a post-industrial waste stream coming out, and you're able to segment it at that point. Does that mean that it's able to be exported without the waste tag on it? That then causes problems, doesn't it?

2: That's an interesting point. I think then we come into the topic of what is waste. Our whole tagline is [redacted], so it is exactly that. It's about making sure that it's not even categorized as waste, because it already has a value because you know what it is.

1: That's [crosstalk]--

2: At the moment, that is not really doable. One would hope that, as we progress, then the definition of waste and by-product can be approved. This is something that's going on in the EU a lot, is this definition of by-product, so when and how it gets classified. It's a really complex one because it's not an overwriting one rule fits all. It depends on your location. That location can be really specific.

1: I guess you have to be quite savvy about the laws and the regulations around exporting waste and by-product, and the definitions around that for each country that you're working in. Is that--?

2: The thing is as we see, it's too fluid as well. Things are changing so much. New technologies are emerging; new developments. I don't want my answers to be fixed, because we do research and we learn things every day still. My feeling at the moment is that there's too much change within the industry, both within fibre to fibre sort of recycling within textiles, and also other industries and other users, potential users of textile waste, that it would be hard for legislation to really keep up.

Interview Date 22 05 2020

From our point of view, the only time, or maybe for some waste streams where it's very obvious, like 100% cost set, you could probably net re-expand waste and you could pretty much sell as by-product already. It's very likely to get a good use case out of it.

With other waste streams, it's really about whether it has been already been assigned to a buyer. For us, we see that's another use of the network is the fact that we can say, okay, we have already really signed this waste stream to this buyer, and they have agreed for X period of time to get this waste stream from their factory at this price, and they will take that under this contract for one year. It's at that point that you can say this is no longer waste, this is one type sort of by-product or resource for use.

It's when you've identified the supply chain, I suppose, it becomes as a resource and not as a waste stream. That's really when you could categorize it as such, if that makes sense, rather than just going into the open market, where you just don't know where it's going or what's happening to it, and then within such an informal network, really hard to control.

1: That was about barriers. Where do you think the opportunities lie for achieving circular synthetic textiles then? More so, I'm thinking about now, but also thinking about sort of next 5 to 10 years, probably 10 years with synthetics is more risk-taking, the opportunities.

2: Obviously, it's with the new technology coming through. I would also say that there's great opportunities right now if we were segregating. We need to start segregating waste, and understanding waste flows within the textile industry as a whole. That is fundamental first step that we should be taking.

Then, of course, there's the opportunities with the new technologies that are emerging, the companies, and just existing technologies standing as well. It doesn't need to all be recycled. It might be that it's actually better for it to go to a low-grade use case, to some sort of synthetic needle-punch fabric, to then the, because that's very little, energy, just shredded out matted together. Then chemically recycled would probably be an even better life cycles, for that textile to come into.

1: I'm just wondering as well, you said that you do you work with some emerging technologies. Is that a strategic thing for you for the future of this industry, that you could perhaps in strategic partnerships with emerging technologies?

2: Yes. We are ahead of the curve. What we're doing as [redacted] isn't really-- We're just slightly ahead of the industry. We're trying to set up the supply chain, which we hope puts us in a really good position.

One of the interesting things with the data that we collect and surveys is that we can actually work with recyclers. We do feasibility surveys, waste surveys, and feasibility reports on different locations for different recycling companies. Depending on what process they have and what piece of data they have, with the information we have collected and the knowledge that we have, they say, "We're thinking of building plant here. Can you please analyze that for us; make sure you understand what the costs are, and what the waste infrastructure is like, and how much is there of a suitable type of input material for us?" [crosstalk]

1: That's really interesting. The local context, in a sense, has emerged as something that's been really interesting in this work, and how regional, how you might potentially be able to, for example, for a chemical recycler, you might be able to pull PET sources from a region. Then think about what other kinds of organizations or industries or businesses that you might need to partner with, for example, to prepare the material for the chemical side, and those types of contextual, very specific location-specific issues. That's quite interesting.

Interview Date 22 05 2020

You, I imagine, have looked into some of those things, or will be in the future.

2: We're just beginning to do those types of surveys as well and reports for recyclers, mainly for chemical recyclers because they're ahead of the game. Their life has been made a little bit easier because of the technology wasn't such a difference from their existing one. They're ahead of the game compared to the others.

1: That's interesting.

2: We hope that will be doing with synthetics as well as we progress. That's the plan. It's good because if we've got that relationship with them, then we have a really good overview of that piece of needs, and then it's about more so we work with companies saying, "Hey, you're building these new plants. Let us set up those supply chains for you with a traceability." We're also working with different recyclers who've got their first industrial plants going, and they're saying, "Next year, we'll be needing X, a big increase. Can you help us set up that supply chain?"

1: Perfect. Wow, that sounds really interesting. Sorry, I'm going to go on to a rather negative question next. After all that positivity, how's the situation around COVID changed your plans in the long term?

2: It's had short-term impact as containers of textiles have been stuck in ports not being released. That's a issue for us. Short-term, it's been annoying. Really, I think we have suffered very little for it. Also, I think if we were maybe at a larger scale with more transactions going on, it would have been more problematic for us, but it's actually been okay. So far, apart from recyclers not really needing to buy so much at the moment, but actually we don't really see--

Yes, there has been a drop in demand, but actually most fiber-to-fiber recycling companies are saying, "Well, actually, it's quite a good time to stock up." They see that the demand is still going on for their products or/and increasing. The feeling and the conversations that we've had with brands, with recyclers and so on, that's a positive for the factories, poor things, is actually one of this is going to be our way out of this issue.

Even companies who maybe only do a small percentage of recycled fiber in their collections, are now looking to increase that dramatically because they see that as a route out of this situation.

1: When you say route out of this situation, what do you mean, exactly?

2: Just a good way to get sales, basically, that they expect that they will be able to get more sales on their recycled textiles, yarns and fabrics, than they will be able to on their traditional ones.

1: That's interesting. Sorry to backpedal. I'm trying to follow. Who is thinking like that? The brands are thinking like that?

2: The brands are thinking like that, and also the yarn producers, thinking and talking a lot about concept here, fiber-to-fiber concept recycling. There's not really so much fiber-to-fiber synthetic recycling going on.

1: That's interesting. In terms of the push as well, I've heard short-term problems in the local authorities, but that doesn't affect you, does it? Textile's not been collected so much. Manufacturers not producing so much, is that affecting your supply of waste material?

Interview Date 22 05 2020

2: It is. Things are still on standstill a bit. People aren't really producing. We can't redo logistics, so the whole chain stops. Hopefully, it will slowly start up. One thing we do have, which is very related to synthetics, is we have huge volumes of textiles used for PPE production. This is a new one for us, which is poly... I can't say the word right. It's PPE waste textile. 80% PPE, 20% PET, or 100% PPE or their blends of thereabout.

For example, we've got one factory, one as a group, and they've got 90 tons by the end of the month. They're saying to us--

1: Obviously, this is production waste?

2: Of production waste.

1: Gosh.

2: They're saying to us, "Can you help us find a use case for it?" I've been having meetings with nonwoven specialists. We sat in some webinars and we've asked questions like, "What about recyclability?" Everybody just shrugs it off saying, "No, because the waste stream is hazardous." We're saying, "Yes, the used textiles are hazardous, but what about all the waste through the supply chain beforehand, because that's a significant amount as well?"

Also, this waste stream is not going to go away anytime soon. We can assume happily or not happily, should be the better, we can easily assume that this production of PPE garments is going to continue prolifically over the next year or two.

1: It seems it's a shame you can't go back to the beginning and say, "Actually, don't make it out of this. Make it out of this." There's a design for recycling--

2: [crosstalk] It is possible to recycle. Well, I'm finding out about it now. There are companies that can recycle it, but whether they have the capacities to recycle. The technology in some form exists, but the-- I don't know how they [crosstalk]--

1: It just goes to show as an example of how reactionary you have to be. You have to be quite reactive to whatever the manufacturers end up producing for whatever the current climate is like.

2: It's also a massive case of the brands. This is why we believe that the first step, which no brand really wants to take because it just means a headache for them, that they should be setting baselines around their waste and what's happening. If they did that, they would understand which fabrics are not recyclable. If they had targets around that, then they would quite quickly change the types of materials they were producing with, or not quite quickly, but you'd hope quicker, and reject some compositions that just weren't recyclable at design stage.

1: Perfect. Some people are mentioning the extended producer responsibility,

2: Yes. [crosstalk]. Again, if there was legislation to say, "These textiles could not be widely recycled, therefore, there's an extra tax on them," that would also be a fantastic way to move things on.

Also, legislation, for me, has to be there to drive this round. There has to be a business case. You're talking about waste. You're trying to transform waste into resource, something that basically is a very low to be a cost to have a small value. Trying to find business cases

to deal with waste in a profitable way is a challenge. If there's not the legislation to create that business case, then people won't do it.

1: I'm just going to move on, because I'm worried that I'm going to take up too much your time otherwise.

2: It's fine. I could talk about this for a long time. [crosstalk]

1: If you're interested, there'll be, after the interview, we'd love to invite you back to make sense of some of it and get your views on that.

Anyway, I'll move onto part two. If we were in front of a computer, I'd be showing you, right now, some pictures of a couple of garments which are part of our case study. They produce sportswear, so specifically directed. They're r business to business, mainly. I've got, for example, a pair of ladies' sports tights like leggings, 100% polyester, and a polyester fleece with zips. All I'm going to ask you--

2: There's one leggings that's 100% polyester. What was the second?

1: A fleece top with zips pocket. All I'm going to ask you is how would this garment's lifecycle be? How would you interact with it as a business? Where would that garment production, where would you interact with it?

1: You don't deal with post-consumer waste, so I guess--

2: No, but we do a bit. We haven't based our current focusing upon it in terms of our research, but we have also been doing research and aware of issues. It's something that I've worked with post-consumer waste streams before joining [redacted]. It's something that I'm very familiar with sorting facilities and stuff like that.

1: I'm guessing, at the moment, it would be more in the production of those garments that you would be where [redacted]

Nin: In terms of garment form, obviously, the one without any wear is easier because you've just got to show up in it. It's not so problematic in terms of preparation for recycling, obviously.

1: In terms of the post-industrial waste, how would that--? Can you envision any--?

2: Thick. Comes down to the composition. If it's 100% PET, then it's going to be easier. It also depends on if it's treatments, if it's got any die processes it's had. It's more about the real detail of the fiber itself that's going into that yarn, rather than a larger topic.

I was speaking with somebody today who was talking about for the chemical processes as well, really, what is the state of that polymer within that fiber has a bigger impact for this. It's a world that I didn't-- I wish I had studied chemistry now. I'm scrambling down writing some terminology and then type to Google later to know what they're talking about.

1: I guess as an intermediary, you're tapping to translate the specifications that the recyclers want versus what the producers are saying. It's the language [crosstalk]--

2: We have a lot of people to keep happy, and the brands, and the waste-handlers.

1: If you were just to round this one off, if you were to get the production waste from these garments, and they were 100% polyester, at the moment, where would that material go? I think you've already answered this question, but just to--

2: If it's lucky, it will be mechanically recycled into low-grade pellets to go into a variety of different use cases, or mixed with some other polymer to make it a little bit stronger.

If it's really lucky, it might be- might, might, might be- recycled into high-grade. That's highly unlikely because the volumes are so small. The chemical polyester recyclers are mainly using packaging waste rather than textile waste as [inaudible 00:46:23] at the moment because it's just easier to get and easy to handle. You've got more interesting support from food companies around it.

1: That's interesting to say about the volumes. Just moving on to the next question. That was about what would happen to it now. Is there anything that you would say about what you would hope would happen to it in the future in terms of how you would engage with it as a business?

2: There's also quite good chance that it's just ending up being burnt or dumped, depending on the country. If you're talking about a country like Myanmar, it's just going to the dump. Legally, it has to be landfilled. The landfills are just holes in the ground with no linings or anything

If you're talking about countries like Bangladesh, where they have advanced- I wouldn't say advanced, but they have a very established trading system for textile waste, then there's more likely that's being used, but then a lot of it ends up as stuffing.

1: In terms of what you would ideally like to see in the future for these garments, what would it look like, from your perspective, in terms of a good lifecycle for these garments?

2: For me, a good lifecycle would consist of it being circulated several times before it did go into a chemical process. You would have a synthetic, maybe going into a nonwoven textiles or insulation, but there was also the collection system in place to collect that low-grade textile.

There's no point of it going into those routes now because there's no collection routes, and there's no way of knowing what that textile is for recycling. I, one day, would like to have so much traceability that you could literally be pushing textiles into low-grade to then extend its lifecycle before maybe then taking it to a chemical recycling, which is more intensive and more energy-consumptive-

1: That's really interesting.

2: -second or third time round, rather than just keeping up with that top-level because in that our use cases for those low-level textiles. It's like we shouldn't really just be chemically recycling everything

[laughter]

1: That ideal situation in the future, what do you think needs to happen in the next 5 to 10 years for that to happen? Who are the key partnerships and the key big events that need to happen in that time?

2: That's not going to be possible in five years, because you've got to have such good collection routes for very low-end use cases. Is there really a business case for creating traceability routes for those low-end very cheap textiles? A legislation would be key to making that an industrial economically viable--

I would say in another scenario where you just have textiles, if you've got a system of more recyclers active and network there, then I would say that the key is setting up the segregation at source, and the traceability as well. We don't want to end up in a situation where we are right now with our existing linear supply chain, where we basically unwittingly made a very complex supply chain, that we now have to try and do, or unpick, should I say, to try and work out where things are going, and where they come from, and what the social and environmental implications of that are.

We have the opportunity now to actually do set up this reverse supply chain or service supply chain to be traceable. Today, you know what today looks?

1: Yes, that's perfect.

2: From the beginning.

1: Do you think that materials ID technologies is so, I don't know-- There's all sorts of things going on basically making it so that each material has an information tag attached to it. Does that have a role in that?

2: Yes. Do I believe in that? Absolutely.

1: Is there a particular technology which you think is particularly promising, or--?

2: Well, it doesn't really need to be a technology, really. It just needs to be some data flow and traceability. There are all these fluorescent sprays or something you can read under lights, and DNAs, and these very high-tech solutions to try and be able to read fiber and know where it's come from. I would say, I'm not against them. Maybe that will be very necessary, but really, companies like Circular Fashion and even ID setting up these circular-these textile IDs, numbers, are enough, and then some tagging technology [inaudible 00:53:00]

[background conversation]

1: Bless you. That's brilliant. Thank you. I'm going to let you go. I've come to the end of my questions more or less. I'll send you a follow-up--

2: The answer to your question is the tagging, this sector IDs. It's about not one company coming up with the whole solution, but a multitude of traceability and companies work digitizing the sector of supply chain, coming together and communicate with each other, and making sure our databases talk to each other. [redacted]

1: No. Just used it to get your perspective. Okay, great. I was going to ask you about the definition for circular synthetic, perhaps if you could take a look at that. I sent it to you in my email.

The only reason that I am asking you to look at it specifically is because we're asking everyone, but you mentioned about how the role of low-grade. Low-grade is not currently included in that definition. I don't know if you want to have a look at it from that perspective.

We're trying to get everyone's perspective so that we can come up with a definition which works from every perspective, which is probably impossible.

2: No.

1: Okay, great. Thank you so much for your time. It's been amazing to hear you under-- I bow to your ability to entertain the children while still talking to me. I seriously, I do not have your skills.

[laughter]

1: That's fantastic. If you are interested in being kept in touch with our research, then we would love to hear your feedback on whatever we come up with.

2: Yes, for sure. Interesting. It's always good. Synthetics has always been something that I have been saying to [redacted], who's the founder of [redacted], "[redacted] we've got to start. Ann we've got to-- [redacted]--" She's been like, "Let's take one step at a time. Let's get the cottons done."

It's been a real area for me that I've been gnawing at the mitt to really start working in. We're just at the beginning of that journey now. I'm interested to hear your research as well. It would be useful for me because I'm sure I would learn new things, which is always important.

1: Thank you very much. Enjoy the rest of your evening. Try to have some relaxing time with your family.

[laughter]

2: I'm now going to play train sets.

1: Perfect. Sounds brilliant. Thank you so much. Thank you. Bye-bye.

[00:56:18] [END]