

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: CEO, regenerative polyester recycling business

**1: Interviewer**

**2: Interviewee**

**1:** I'll start with the questions. Can you tell me a little bit about the background of [redacted] and your role there?

**2:** I'm the founder and CEO of [redacted]. I'm trying to give you a rough thing, going back really 24 years ago. This company has been structured over the last 17 years. 24 years ago, I realized that PET test bottles were inverted commerce in recycle. Really, they weren't being recycled, they were being downcycled. The big issue that's been in the industry is that there has been very little, if any, technology development in recycling whether it be PET or any other product.

[redacted] My definition of recycling, coming back to your definition, is to take a product that somebody doesn't want, and then to make a product that is equal or higher value than conventional material. For me, that is what recycling is. What I realize is that most people don't recycle. They down cycle or waste manage. When we started looking at PET, plastic particularly where there are literally thousands of thousands of companies that do one or two things. Either they can take a plastic PET bottle and mechanically recycle it. In which case, what they're doing is they're just cleaning the outside of the flake or outside of the bottle, but they're not getting all the dirt that's absorbed into the flake. They can't get out. The sugar molecules, the bacteria, the color, or the flavor, all that stuff gets absorbed into it. That was holding back PET manufacturing so that people who were doing PET manufacturing were either having to take extremely clean bottles, that typically only recycling clear water drinking bottles. Then even then, when they're taking clear water drinking bottles, they are making a product that was quite low quality, low value. They couldn't make high quality, pure grade conventional. There's still some downcycling.

For example, do you know what staple fiber is?

**1:** Yes.

**2:** Staple fiber from plastic bottles have been on for 25 years. When people start to talk about, "This is breakthrough plastic." I was like, "It's not breakthrough at all. It's been done for 25 years." The largest sector is staple fiber manufacturing from plastic bottles, but they can't make filament yarn. They can't make high quality filament yarn. This is, again, what the public often is not aware of. The differential between

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staple fiber and the differential between filament yarn. Again, this comes into micro plastics and all the rest of it.

The other end of the spectrum are the people who are recycling plastic bottles, but are effectively to be taking it all the way back into oil. People don't realize that plastic comes from oil, PTA [unintelligible 00:10:12] oil. If you guys you googled at that time also, there were probably 200 to 300 companies, today there's probably 3,000 or 4,000 companies that can take a plastic bottle all the way back to oil and then rebuild it. The problem with that is that it's too expensive. The cost of going up the chain and then down the chain it's never going to be competitive with conventional oil.

[redacted],

It became very clear to us that if you have a conventional PET, you normally start from oil then you go oil, [inaudible 00:11:07] processes and you get two chemicals, PTA terephthalic acid, and MEG. You mix your PTA, MEG, and glycol and you get an ester. Your ester is then your chemical building block for anything polyester, be it clothing, bottles, packaging. We focus our effort with taking a bottle and reversing it back into an ester, rather than all the way to oil or PTA. That takes a long, long time. We had our first major breakthrough really in 2010 when we were able to recycle 100% plastic bottle back into an ester with exactly the same quality.

If you look at the quality of our material, our ester is the same quality as the chemical quality. That was the first major breakthrough. At that time, of course, we were small, we were on a pilot-scale, the cost was high. The second-biggest breakthrough then came in 2018, because we now were recycling approximately 3 million plastic bottles a day. We were pretty high scale, we have about 350 employees, big plant. To walk through the plant it could take a good three hours.

**1:** Whereabouts is your plant?

**2:** Our first plant that we've currently got right now is in India, we're in the process of building more plants in various places in the world now, but, yes, the first plant was in India. That's a 10,000-ton plant, which people think it's big but it's really quite small compared to the normal conventional industry plants. In 2018, we could actually make our ester, not just the same quality as that from oil and gas, but cheaper. We're cheaper today than oil and gas.

**1:** That's impressive. The waste stream for that plant does it come from globally or is it--

**2:** To be honest because we're doing 2.5 million bottles a day, we just take it from about 120 km radius of the plant.

**1:** That's amazing, isn't?

**2:** Not really. Just to give you an idea, as I said, we're doing 2.5 million to 3 million bottles a day, how many bottles a day do you think London discards in a day?

**1:** I couldn't guess. I don't know.

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**2:** Eighteen million to 19 million a day.

**1:** When I said it's amazing, I think that it's amazing that you-- I didn't know that you could do it from such a small-- It just shows what a pool of material there is there globally.

**2:** That's what I'm saying to you, London alone has seven plants. Seven manufacturing facilities just in London.

**[redacted]**

**2:** I think the key thing I just wanted to say, what we do, we produce-- It will answer a lot of your questions once you understand that, what we produce is the chemical material ester. Thereafter, a lot of questions get answered because anything you ask thereafter is what equipment do you use? Standard. What products can you produce? Everything that PET chemical has done. What's the quality? The same. What's the price? The same. All of those things equal the same. Can you recycle again, again? Yes, the same chemical material. We start from the base chemical material. We're not an intermediary.

**1:** No. That makes sense. Actually, I'll ask you one more question based on the company, what was the motivation to move into textile-to-textile recycling?

**2:** Actually, it was more of a challenge and a dare. Our process uses what's called glycolysis and we had a lot of people on the plant. We can process any that is made from 100% PET. Just to be clear, we're not focused on textile-to-textile. I'm focused on PET to PET.

If my input is 100% polyester t-shirt or product or garment, we have already taken 100% polyester PET garment and converted it back to ester and then back into a bottle. I have taken a t-shirt today-- We've done that, we're already selling a product to a big brand. [redacted] we're already able to do approximately just under about 400 kg, half a tonne a day right now.

We can take half a tonne of polyester textile and process it back into an ester and then from that ester, make anything really. Make clean film, bottles, or polyester again.

**1:** No? Okay. The feedstock for that, I'm presuming it was a post-consumer waste or [redacted]

**2:** They supplied it to us. This particular brand supplied us the garments they wanted us to recycle, so I think it came out of their warehouse.

**1:** Like stuff which is unsellable, that kind of thing?

**2:** Yes, I think so.

**[redacted]**

**2:** To be clear, recycling textile is extremely, extremely easy compared to recycling bottles [unintelligible 00:17:50], because your textiles, your color, is dyed onto it, wherein a plastic bottle, your polymer is infused with the color before it goes to the chemical process. Your color is infused into the polymer, so you have to segregate the polymer, then filter out the dye colors, wherein in a textile, you know if you just stick it in a bath of bleach it will come off, it's really easy.

Also the dirt, the dirt in a polyester textile is again, extremely easy to do because it doesn't infuse into the fiber. That's why you can wash your clothes in a washing machine, but you wouldn't wash a bottle in a washer because it doesn't take off the bacteria.

Frankly speaking, in all honestly speaking, there's been this huge grand thing about, "Oh, that is textile-to-textile." Honestly speaking, to answer your questions, the technology is there, it exists today. We can do it tomorrow.

**1:** What we need to get to the bottom with is your opinion on what the challenges are to making that post-consumer textile-to-textile synthetic recycling a reality?

**2:** They vary in my opinion, but, yes, we'll come to that if you're ready-

**1:** First of all, let me ask you, in your own words- I know we've touched on this- but how do the activities of [redacted] relate to a circular synthetic textile system?

**2:** As I mentioned, we are ready to take a bottle into ester and ester into a textile and textile back into an ester, and ester back to a bottle. Once you can take anything back to that chemical material, ester, and the same quality then you're there.

**1:** The next one is really easy because I think you've already answered this, but maybe just a bit more detail, where do you think the opportunities lie in achieving this circular synthetic system for your company?

**2:** We should probably discuss later what are the hurdles to making it successful-

**1:** Yes, that's the next question. [laughs]

**2:** There's a huge opportunity. There's 660 billion plastic bottles a year that are discarded every year. As I said that's ridiculous. There's more than 400 million plastic bottles. There's a huge, huge number of plastic bottles out there and there's a huge number of textile carbons out there. You can get it from a factory perspective, post-industrial, right down to post-consumer.

[redacted]

**1:** I can imagine. I mean that's one thing that I've learned is you can't really do it on a small scale. It doesn't make it economical, does it?

**2:** Yes because you're dealing with a polymer. What people don't understand is when you have a 10,000-ton a year plant when you put in 2 1/2 million bottles a day first of all, you've got to put in 2 1/2 million a bottles a day you've got to run the plant for three, four days until it stabilizes. Then you run your test off that and then if it

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fails, the test hasn't worked and your process hasn't worked you effectively lost eight or nine days.

Then you have a polymer which is in about, I mean in our plant we've probably got about 8.9 kilometers of piping. Then you've got to clean up all of that piping, all of that polymer. Every time you run a trial through the system you burn about \$2 1/2 million per trial.

1: There's a reason you're an entrepreneur and I'm not. [laughs]

2: I'm not kidding you and I say you've converted 30 to 35 million in under two months. I think people don't understand that when they get into the sector.

[redacted]

1: You've already said that it's not really about textile-to-textile. It's about any PET, but we're focused on how we can shift all the post-consumer textile waste. We're thinking about textile-to-textile being one part of that bigger system. What are the barriers do you think to achieving this circular synthetic or circular PET system which includes post-consumer textiles? What are the barriers to you achieving that?

2: Just one simple answer. The brands. [redacted]

1: Can you elaborate on that?

2: That is simple. It's very simple. [redacted]

2: We started off this PET textile industry a long time ago and with brands like Nike, Adidas, Puma, Decathlon, Zara, H&M. They all started to get into the sector and they started to buy. There was one very large brand, which is a UK dominated brand, who made a lot of noise, a lot of noise, a lot of noise, and never got on board into this plastic bottle to recycle. They then hired a new brand manager who I know very well. She then correctly said to their organization "We need to jump ahead of this because we're behind schedule. We need to jump on this textile-to-textile instead." I assure you this is categorically how the thing all started up and this started up about 5 1/2, 6 years ago.

This particular brand then got a lot of money into marketing the need for textile-to-textile. Why? As a strategy really to put down the other people who were doing PET-to-textile, bottle-to-textile and categorically cut it out of fact, which is not very well known in industry. This particular person did a very, very, very good job and this particular person did an extremely good job in getting media coverage, press coverage, people coverage, forum coverage, setting up PTIs, setting up sites like this, getting a lot of the other brands in. We all started about talking textile-to-textile, textile-to-textile, textile-to-textile.

[redacted]

2: It depends what you want to do with that. If you want to really sort out inverted commas-- I hate this word waste, by the way. If you want to sort out making value out of something that somebody has already used once and no longer wants use of

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then there are many ways of doing that, many ways of it. For example, rather than to focus and get so concerned about consumer-to-consumer, post-consumer waste, why don't we treat the approximately 23 million tons of industrial waste that comes out?

This is what I said to that brand. I said two things. We can do this immediately. We can just take-- If you're so concerned about the environment and if you're all this green hype about, we have to do textile-to-textile, we can do it tomorrow. We can just take post-industrial and you start to buy from tomorrow and then of course we'll have to develop the technology in the next 3, 4, 5 years to do post-consumer. There's no doubt about that.

Just to go back to the PET story, because this will give you an understanding of where the barriers are, because I this is really important to understand. Any company in the world has to do technology idea, pilot trial or lab scale trial, lab scale, then pilot, then larger pilot or big scale, which is where we, [redacted], are and then scale up for full industrial. Just to give you an idea, the average polyester conventional company today in the world-- because this is a 70-year-old industry. The average plant in the world today, the smallest in fact that you'll find is about 400,000 tons. People like Far Eastern, their plants are two million tons a year and we're at 10,000 tons a year. Just see the difference there.

Then you've got to ask yourself when you talk to a brand and they say to you, "We want to buy this product but we're not prepared to pay you a premium." [redacted] Adidas or a Puma." Well, good. We're alike. We sell too. We'll sell for £30. Do you know how much the polyester in this t-shirt is? Go on. Give me a guess...

1: I have no idea. I really don't.

2: It's really important for your report because this is really important to understand, right?

1: Yes. Okay.

2: The polyester in this is about 23p.

1: Wow. Okay.

2: When I go to a big brand and I say, "We're a startup company. We're doing 10,000 tons a year. Can you please pay me 25p for my polyester which is about 4 to 5% more or maybe 20% more even?" "No. Come back when you have it the same price. Not interested, not interested." I'm just being clear why I said the breakthrough in our company. 2010 we had this technology man. We've been pushing this thing since 2010. Between 2010 and 2018 we lost \$200 million, right? It's only in 2018 it really took off. Why did it take off? Because our customers are seeing prices are cheaper.

1: Okay.

2: That's the fundamental, important thing. If my price was still more expensive, we'd have never taken off. Forget it. No chance in hell. That's the other frustration

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because it comes back to funding. When you talk about funding, the only reason this company made it is, frankly speaking in all honesty-- I've been doing this as a passion for my life with all of my technology companies. Genuinely, I live a very frugal life and all the companies I've made, I've pumped my earnings and my fortunes back into the next company.

For example, I've put another 8 million of my money to recycle solar panels because nobody's doing that and what's going to happen in the next 10 years? You're going to have the government standing up and saying 'oh no we're sending panels to Africa and we're dumping solar panels in developing countries'. Yes, but it takes time. It takes 20 years guys to develop technology.

These are breakthrough technologies. This is not like making a new Hoover like Dyson, right? Even then, you talk to Dyson, it's 17 years from when he first conceptualized the idea of the vacuum thing to when he produced it. People don't understand that. That's what irritates you. When you go to a big brand and you say, "Well, we make 10,000 tons a year", and [redacted] says to me, "Yes but we need 24,000 tons."

You are like, "Yes, so help me. By buying my yarn for 10% more because if you buy my yarn for 10% more, my company will make a profit next year of £2 million, and if I make a profit of £2 million, I'd be able to raise private equity money. I'd be able to reinvest the money but because you won't pay me that extra 20%, I can't raise private equity money. I can't build you more plants." Now, you come back to your question about why are the problems? It's just brands.

**1:** Yes. In a sense, their custom is investing in their future but they're not long sighted enough for it.

**2:** They're not willing to do it. Brands are all about profit now. Profit now, profit now, profit now, profit now. They're all about marketing now. "Let's jump to the next big marketing thing. Let's make it look like we are brilliant because we are eco-sustainable," [redacted] You know you look at an [redacted] even who I think are really good by the way [redacted].

Then you look at them. [redacted] its total demand a year is 56,000 tons of polyester. Right now, they're buying 1,200 tons. They can't buy more because there's no capacity out there but they're not prepared to support people. Even if I ask [redacted] for a long term contract and I say, "Right, well at least give me a long-- You keep saying 24,000 so give me an order for 10,000 so that I can take an order from 10,000 to another investor. Then, I can take it to the bank and I can say to the bank, "I've got a committed deal from a guy."

I'll get investor money, I'll get 70% bank financing and I've got a committed customer. "No. We don't do that because we don't know what the retail market's going to be in two year's time or one year's time and we don't know if there's going to be a COVID virus or something." "We don't know that, right?"

Coming back to your textile-to-textile question, what are the barriers? Barrier one, telling the truth. Right. the technology to do textile-to-textile exists today. Don't

bullshit. Two, it exists today but it exists to make a product that is going to be more expensive than virgin, or conventional, because it has to be. Why? Because it's an electric car. It can't be \$20,000 like a Ford. It has to be \$80,000 like a Tesla. Are you prepared to buy it? No? Then, bugger off. See? Are you willing to take it step by step, i.e like everything in life, buy the lowest hanging fruit first and then, get more complex.

Why are you so fixated-- In fact, you're the only person I've talked to probably in the five years who has focused on polyester. Most of the time when I have this discussion with people, I'm saying to them, "Why are you so focused on textile-to-textile when 85% of your textile out there is polyester? Will you quit talking to me about textile-to-textile and first talk to me about industrial waste? Then, talk to me about polyester or cotton." There is a lot of 100% cotton out there you can recycle. There's a lot of 100% polyester out there you can recycle and there's also 100% nylon out there you can recycle, okay? Why don't you do that."

Three, when you, Mr. Brand make your product, why do you go and put 85% polyester and 15% elastane or 15% elastane when it adds zero value to your product? Because when you put that garment on the hanging rail, it is not sexy to tell people they're wearing polyester because polyester's had such a bad name, so when you put that garment up on your hanging rail, you push that it has 10% elastane or 15% polyethylene, you never say it's got 85% polyester. Why aren't you spending your big bucks and your big marketing money getting people to understand how sexy polyester is today because polyester today is totally different to what polyester was 20 years ago [redacted]

**1:** Yes.

**2:** That's three. Four, get off your bloody horse, stop making us do all the hard work on technology development, pushing us to do the technology, paying people like you [unintelligible 00:37:24] that place-- What's it called? Oh, God. I don't know how many honestly. The number of people who call me to have this discussion on textile-to-textile who are funded by a brand \$200,000 to \$300,000 worth of grant money. It's insane.

"Why don't you just put that money into a bloody pilot plant, we'll have it up and running for you in less than six months?" "No. Oh no. We're not into technology. We're marketing and we're a brand." Well, you know what? Go away and come back in five, six years because we're just going to have to do the work anyway ourselves." Sorry for doing this. Anger and this frustration and this passion about-- Honestly, I'm telling you.

This is not just a cue to textile-to-textiles or PET. This is exactly the same thing we did in recycling fridges and washing machines and dishwashers. It's exactly the same thing I heard with lithium-ion batteries. It's exactly the same thing I heard with fluorescent lights. It's exactly the same thing I'm doing with solar panels. The system is designed for people to make money and market and brainwash.

You look at all these companies again. Ocean plastic drives me nuts. The biggest company out there last year in ocean plastics collected 18, 1-8, tonnes of plastic

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from the ocean and they made \$30 million. I kept asking just one question, "18 tons of plastic will last in my plant for about 11 and a half hours, right? That's how much I process roughly in a day, 26 tonnes a day. I said, "How much diesel oil did they put into the sea to collect those 18 tons of plastic?" [redacted].

1: I'm with you on that one at least. [laughs]

2: Coming back to your first question about barriers and stuff. Quick summary. Technology exists, the brands just need to be able to either do one or two things, be willing to pay more initially for the product because it's a startup industry. An electric car costs three times more than a normal car and they should be prepared to pay 75¢ for a \$30 garment, not even 27¢. The day they pay 75¢ for this garment, it will be a phenomenal business.

1: Very good. I understand all your points and that's really--

2: They really got to stop brainwashing and wear people that you can help tremendously, and this is why I do these polls is to point them out, right. I hate Trump. I've got to use his word, I hate this fake greenwashing, rubbish, fake studies and this fake. We should be doing post-consumer because it's great because we'll get everybody interested. No, it won't. Just start now. Start with the lowest hanging fruit and work your way up.

1: No, that makes sense. When we go on to the roadmap, I think that's really useful because we can say that, actually there's a development phase where post-industrial is really important and that will lead on to the post-consumer. We can map it on. I just want to move on because otherwise, we're going to run out of time.

2: I talk too much.

1: No, it's fine. It's all really useful stuff. Just want to cover a couple of points. Just really briefly, you already mentioned in your email how COVID has affected your business because you've set back a couple of your plants or your plans may take a bit longer. Is there anything else that you'd briefly like to add about how this current situation might affect your business short-term and long-term?

2: I think loss. Investors are pulling out. The ability to grow plants is going to pull out. Banks are not loaning money. They're shutting down. Really, the problem is getting bank funding.

1: That's the financial side. What about the material side? Anything about how the technology or the take up may be hindered?

2: Financial side is definitely for me the first big one. Two just running and operating your plants. It's a nightmare today. Our plant is shut down and has been shut down. We're hoping to restart it first of June.

1: Because of personnel?

2: Sorry?

1: Because of personnel?

2: Because there's a shutdown globally. It's shut down. We might try to open it on just like government I think open on first of June. That's going to be a nightmare. Orders, customers are not placing orders at the end of the day. I've been told by one of our, you can put in anything, but one of our customers who sign 28% of my order book has told me I'm not getting any orders until approximately April 2021.

Think about it, You're a company, which is a big brand, the warehouses are full, absolutely full to the limit. Even in a normal pocket and without COVID, it will take you three to four months to empty your warehouse. With COVID it's going to take you probably seven, eight months, nine months to empty your warehouse. Then when COVID is over, how many people out there do you think are going to be able to afford \$150 coat and a £30 t-shirt? That market is going to fall the fastest. Honestly, this downturn it's going to hammer the textile market.

1: Okay. I don't want to dwell too much on that. It's depressing.

[laughter]

2: If you try and run your company, it's going to be really hard.

1: Yes, I can see that.

2: How many employees get sick? How many employees in a 350 plant where they are working do I have to isolate them?

1: Yes, I can see it.

[redacted]

1: Come back to the beginning. These two garments are 100% polyester legging and a fleece which has a zip. Zip is at the pocket, zip as at the top. Would you be able to just briefly go through how you would at the moment, I guess, from what you said, the most likely interaction that you would have with these garments is that you would supply that bottle to fiber, metallic polyester for them to be produced?

2: Correct. We produce the yarn.

1: You produce the yarn as well, not just the polyester?

2: No, we actually produce the yarn. If you look on our website we produce the yarn.

1: Okay. In the future, and that's pretty straightforward, in the future what do you think, what do you think the barriers might be for these garments to come into your process?

2: Nothing really.

1: Nothing? Okay. Who prepares the material? For example in your pilot, your trial that you did who prepared the garments for you to incorporate them into your process?

2: We did. We just have to take out the zips and the buttons and stuff that's all. The zips are taken off manually, but the textile, we don't need anybody to do anything to it.

1: Okay. You presumably, because it was a small scale production--

2: I wouldn't say no barriers to recycling. I'd say no barriers to the technology.

1: Okay to the recycling technology.

2: The barriers are cost, money et cetera and funding. No barriers to recycling technology.

1: Okay. When you took the zips out, for example, did you see any economic calculations on how much that was costing you? Is that is that a barrier or do you see that?

2: We take off the labels and everything else. It's far more complicated.

1: Oh really, okay.

2: Yes, the labels have a glue.

1: Do you do that manually?

2: Yes. These labels, zips and buttons and everything is a problem.

1: Okay, that's interesting.

2: A real problem.

1: Okay, There's four different ways that they can add their identity onto these garments that there's print, there's embroidery. Do any of those cause you any concerns?

2: As long as it's 100% PET polyester.

1: They would need to use polyester thread but I think they would anyway, wouldn't they?

2: I assume so. I don't think there is any other unless it's cotton but inside it's polyester. As long as it is 100% PET polyester.

1: Okay, that's positive. [laughs] Going forward to what might happen in the future. I know you said that first you need to do post-industrial waste because that will help to build the business and build the infrastructure and the investment, but in the future, if we think about 10 years time, maybe longer and you are able to process a post-consumer--

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**2:** We can do it now. The fundamental difference is if I take post-industrial waste I get paid to take it. Post-consumer waste that means you've got to out yourself to merchandiser. Again, it's not a technology thing. This is why, as I said, people spend too long on technology. People got to get off this, you've got to stop looking at this as a technology thing. This is about a finance brand, market consumer commitment. That's all the stuff about this. If there's one thing, hopefully when you leave this conversation with, you'll understand that every single person out there because they don't understand the technology puts the technology as the number one barrier issue. I'm trying to say that's not the barrier issue.

**1:** No.

**2:** The barrier is things that these brands themselves can fix. The first part and you got to ask the brand is, why does it make a difference to you if it's post-industrial or post-consumer.

**1:** Okay.

**2:** Aren't you using 'waste product'? The commoner is using your word waste product anyway? Surely if you're using post-industrial, you start to get the consumer used to using recycled material, and then surely what is the difference, in your opinion, with a brand between a post-industrial and a post-consumer product in terms of the quality when you get into recycle? There is no difference.

If you want to give me post-consumer, by all means, give me post-consumer. You have to collect it. There's a cost to collecting it, the cost to valuing it, there's a cost to transporting it because you'll get post-industrial, industrial guys have the problem of getting rid of it. That's the only difference. There's no difference in technology, not a difference in the product quality, the only difference is in the [unintelligible 00:51:33] treatment and the cost of collecting.

**1:** From your point of view, when a post-consumer shipment arrives to you, it's more problematic because it's going to cost more. It's already loaded with costs.

**2:** When you get a post-consumer shipment sent to me, who guarantees it's 100% polyester. There's not one piece of cotton in there or nylon or this, right? That's the challenge. [clears throat] Who knows it's 100% polyester? When you go to a factory which is only making polyester and you get post-industrial, you know it's all polyester.

**1:** Yes, sure. It's also the risk of inconsistent supply.

**2:** Yes. The other thing just to be clear with you, when you get post-consumer a lot of the time, even in plastic bottles, when you get post-consumer bottles, only just so that you understand. I go to the industry and I buy one tonne of post-consumer bottles, right? Without a shadow of a doubt when I buy one tonne of post-consumer bottles, I get really about 800 to 900 tonnes of actual product, why? Because the guys selling the bottles fill it up with water, they fill it up with dirt. Sometimes you buy one-tonne bale and then in the middle of the bale you'll find a big heavy chunk of metal or stones or rock or concrete. That's the business you're in, right?

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Sometimes when we get a fridge to recycle in our plant, you open up the fridge and inside people have stuffed all sorts of contamination waste you then have to pay to get rid of. The waste industry or the recycling industry, there is a complex industry.

**1:** Okay. We're running out of time. I got this roadmap. This is ultimately what we're going to end up with from this product we hope, is something which gives us an idea of what needs to happen in the next five years, what needs to happen in the next ten years. I'm going to put on what you've already told me-

**2:** You need to break this down because you need to break this slide down into the bare sectors, technology, consumer demand, market. You can have one client like this but it's probably, in my opinion, less helpful than having a slide where maybe you have six lines on the slide. That grey line that you have might be the end line that you have but on that line, you could probably have a line like [unintelligible 00:54:05] but you'd have a line for technology from existing and getting better. Then you'd have another which is the price coming down. Do you kind of know what I mean?

**1:** Yes, I do. What did you just say, technology would be one and what, what was the other one you said?

**2:** For technology now, you'd have already be and the technology exists but of course all of the time it'll get better, price will come down all the time, quality will improve. Let me give you an example again, okay? Just to give you a real analogy. Today you go and you want an electric car.

**1:** Yes.

**2:** When you buy an electric car today, you know that it's going to only do 120mi before you have to charge it and you know you have to pay three times the price. This sort of thinking is crucial. When they buy today a product for textile-to-textile, then maybe they would have to use it only for let's say, I'm giving examples now, just try and get comparable. Maybe you'd have to use it for only products which are black or dark-colored or whatever, maybe you can't use it for white and brilliant white.

That's same analogy to you can't, you have an electric car that does 120mi, you can't do 500mi. When you start to market, this is again the problem with these brands that I must get across to you. When their brand comes and talks to me, the brands say, "We want recycled bottles or we want textile-to-textile and we want to make this product." You go, "Well, yes you can but that's a really really high-quality engineering product. What you trying to make right there is you're trying to make a convertible Corvette. Are you sure you don't want to start by making a Ford Escort to start with?"

**1:** Yes [laughter].

**2:** Well, because that's a lot of-- to make a Corvette engine, electric that goes 500mi to the charge at \$20,000 is really, really impossible, I mean in 10 years, but I can supply you stuff today that you can make a Ford Escort. That will do you 250mi and will cost you 1.2 times the price, do you want to do that?" "No, no, we don't want to do that because the consumers who we were going to sell to are the consumers who want to do recycling and they're only the guys who are going to buy the 40, £50

garments." "Fabulous, you're making product that you're going to sell 40, £50, then we can do it because could you instead of buying it from me just for 25c just buy from me for 75c then we can do that." "No, no."

[laughter]

1: Oh gosh. Okay. I've put brands on here because they seem like, the conversation with the brands seem to be quite key to your business. Are there any other partners, any other kind of--

2: You asked me the one challenge and I said one right?

1: Just brands.

2: I said brand and then you said well, you need to expand on it.

1: [laughter] Well.

2: It comes to the brand.

1: it all about the brands, okay.

2: All down to the brand. They spend a fortune in marketing, a fortune in marketing.

1: Should I put there marketing on polyester?

2: I dont know if it's a polyester? No, I think it's just, take all that marketing budget and put it into actually supporting businesses, to actually build the plants they want, to be honest with you.

1: Okay.

2: It's so nice when you the difference between staple fiber. Do you know how many people I've talked to in the textile industry who had textile buyers, who are big brands who don't know what staple fiber is?

1: [laughter] Lots, I should imagine. I'm not surprised that very few people know it. I'm just going to put then diverts marketing budget to supporting-- how would you sum that up, supporting?

2: I would say, first of all, they need to-- I just feel the easiest thing that brands need to do is really to listen if I can be blunt and they know the item, I'm not going to put it, you have to think how you want to phrase that. [laughter] They know the answers man, they just don't want to--

1: They just need to--

2: They need to get really another live, a real story.

1: Pay a little more.

**2:** [redacted] They buy approximately 40-50 tonnes a month from us, every month and they never did one marketing pitch on that because it wasn't sexy, it's ocean plastics or dress which was worn by a star was very very sexy and they spent almost \$1.3m on that marketing budget which if they had given us \$1.3m extra, we would have been able to raise money for our plant to build them another plant.

**1:** Yes. The ocean plastic thing is a really interesting case in that whole media-- What people listen to and the power of stories-- It was fascinating.

**[redacted]**

**1:** I think I've got a really good idea of how you feel about these different issues. Just quickly to go on to the last thing, which is this definition if you like. it's just a starting point and we're going to ask everyone who we interviewed to give us their thoughts because at the end then hopefully we'll be able to come up with something which is a consensus and has had input for everyone. Is there anything that you would add or any that you'd make about it?

**2:** On this one, I think just being with the top one, I'm never keen on the word waste. I would try and replace waste with, a product that's used once or a product that is excess or-- I think we should just try to move people away from that mindset. It's a bad mindset to have. The more we start talking about waste, then you start to think that you're making a product of no value is okay or treating it as okay. I have a philosophy that I call minds above ground. I look at everything in life as a mind above the ground. Anyway, that's separate, minds above ground is this big concept and I have time and money I'd like to push it.

The rest of the definition, because there's a bit of a negative social impact... Yes, equal or higher value. Again, I love that, not down the waste though. A higher value than the conventional stock that it's replacing because we need to understand, let's say you take--

**1:** Can we just put feedstock then? Can we just put feedstock-

**2:** Even feedstock, you got to understand, if you take a plastic bottle or a proposed consumer product and you make a product better, equal the quality of the conventional, brands are not going to buy. Brands want like for like replacement. Equal or higher value than the feedstock. While the feedstock has zero value because it's a waste.

**1:** Okay, then the product then.

**2:** The quality is terrible. I would have to say, it has to be equal or higher value than the conventional material. I used to use the word virgin material, but I was told off too many times so- we need to replace the word. It was in America in a conference, God, the whole conference went against me because I used the word virgin material. [laughs]

**1:** Really?

**2:** I now use conventional material.

Interview date: 12 05 2020

1: That's interesting.

2: Don't use the word virgin material. You'll be killed [laughs]. I think that the rest of it is good.

1: Okay, great.

2: [Reading aloud] just those two are a waste now. Synthetic [reading aloud] Again, I would say maximizes potential re-use. It should be-- If you're going to build a definition guide, it should just be, this is the second one, it should be reused, it should be able to be converted back into a product which is equal or higher in quality to the conventional. I don't know why we set ourselves such low barriers.

1: I'll listen to the audio and will change that one.

2: Again, I think when you're doing a definition, almost your definition is almost your mindset as you're going to set people as a target. Normally it should be, you're making a textile, which can be recycled back into a textile of equal or higher quality. That's it. That's your definition. If it's not doing that, then it's waste management. You're making low quality, then it's waste management it's not recycling. You make worse quality, the next time you're going to recycle it's going to get worse quality again, then you're defeating the purpose.

In fact, if you make a product that has worse quality, that gets back into the recycling sector like mechanical recycles of PET, that's a disaster. They can't keep on mechanical recycling because the quality keeps getting worse. Don't set yourself a target of making a product that has low quality. It makes no sense. [reading aloud]. I like that one. I do like that.

1: Okay, then, I've finished.

2: Yes, sorry, good evening, sorry for shouting getting excited--

1: Okay, bye

**[END OF AUDIO]**