BCG

Climate Vision 2050: BCG podcast
Episode 7: Green is the New Black

Act 1: Intro

[00:00:00] **Nick Howard:** What you are about to listen to is a work of imagination, but not fantasy, set in the year 2050.

(Music blasting. On a catwalk at an international fashion show catwalk in Tokyo.)

[00:00:08] **Mutinta Banda:** It's Tokyo Fashion Week, an International showcase of the latest trends in sustainable design. Model Emiko Ikeda struts down the runway at the Shibuya Hikarie [She-Boo-Yah Hick-Car-Ee] shopping complex. They walk through a simulated forest wearing a fantastical cameleon inspired jumpsuit which changes colour with every step. Physical and virtual patrons crowd either side of the aisle.

[00:00:24] **Announcer:** From Sew and Bear's newest collection, Emiko Ikeda [Em-eek-Oh EE-kay-dah] wears a piece inspired by the impermanence of nature and cycles of growth and rebirth.

(Says this line under their breath - but also elevated over the music.)

[00:00:33] **Emiko Ikeda:** This jumpsuit is the tackiest thing I've ever worn. At least it's got high UV protection...

[00:00:38] **Announcer:** For our digital audience, try this piece on in your very own home, and feel free to project yourself onto our catwalk to experience it for yourself.

[00:00:49] **Emiko Ikeda:** [Sigh] This is the part where all of the AR patrons come up on stage. Ugh... I feel like I'm swimming in avatars with all the projections.

[00:01:00] **Announcer:** Next up is Ancient Cotton followed by Poddingtons.

(Sound of walking off the stage.)

[00:01:07] **Emiko Ikeda:** Poddingtons? They weren't on the setlist...

(Soundscape fades out.)

[00:01:10] **Mutinta Banda:** Today in 2050, to stay on top of the fashion game, every garment needs to tell a story. In this episode, we explore how consumers use those stories to express themselves, while embracing tried and true as well as current materials. We'll also dive into the latest design trends and approaches to reducing fashion waste on the manufacturing side.

[00:01:34] **Mutinta Banda:** I'm your host Mutinta Banda. You're listening to Climate Vision 2050.

[00:01:38] **News Clips:** In 2028, Fashion continues to be one of the most polluting industries in the world.

[00:01:43] **News Clips:** Many luxury fashion brands held to their commitment to ban virgin polyester by 2035.

[00:01:48] **News Clips:** Be sure to recycle your clothing in the appropriate bins as they roll out in 2042.

Act 2: How the World Works

(Emiko sits in the green room at the fashion show in front of a mirror. Sound of some chatter in the background. Sound of getting dressed.)

[00:01:55] **Mutinta Banda:** In the green room at the fashion show, Emiko stands in front of a mirror framed with LED lights. Diverse models of various heights and sizes stand all around the perimeter of the room putting on clothes from racks in the center.

[00:02:13] **Emiko Ikeda:** I've always had a flair for the theatrical, so Ancient Cotton's line is exactly the fashion flavor I crave. If I connect the fabric to this wristband...

(Sounds of beeping)

[00:02:23] **Emiko Ikeda:** It projects a story of these fibers onto the garment. People are very eager these days to know where their clothing is from. Looks like the cotton was grown by the Fukushima Organic Cotton Project which - according to this - started 40 years ago in the 2010s as a way to reinvigorate agricultural production following the Fukushima nuclear disaster in 2011. Cotton is a poor absorber of radioactive material so it provided a good alternative to food crops in the region. This fabric was a t-shirt initially that went to 4 consumers. Then it became pants and now this dress.

(The beeping turns off. Throughout the scene below we hear the sound of her getting dressed.)

[00:02:56] **Emiko Ikeda:** If you look very closely at the fabric of this gown, you'll see there are tiny round symbols of the Fukushima prefecture - a subtle way to point to the region where the cotton was initially produced.

[00:03:10] **Emiko Ikeda:** I've been modeling for 2 years now since finishing my studies at a fashion institute in Tokyo. My dream is to become a designer with a top brand.

(Over a PA system)

[00:03:21] **Announcer:** We've got one more gown from Ancient Cotton before we see the rain-ready gear of Poddingtons.
(Sound of wheeling a rack of clothing into the room as Emiko starts walking out, but stops to flip through the Poddingtons rack.)

[00:03:28] **Emiko Ikeda:** That's my cue.

[00:03:35] **Mutinta Banda:** As Emiko exits the green room, they stop to flip through the Poddingtons rack.

Emiko Ikeda: Wow... the recycled polyester on these Poddingtons raincoats looks suspiciously perfect. Hmm.

[00:03:35] **Mutinta Banda:** In the 2010s, global apparel and footwear consumption was over 50 million tonnes. This rose steadily towards the 2030s to over 100 million tonnes - a total that is equivalent to 500 billion T-shirts. Many of those garments ended up in landfills after being worn only a couple of times. The industry needed to work to reduce impact.

[00:04:02] **Geraldine Wharry:** Fashion is a mirror of society and is one of the cogwheels in society in terms of commerce and identity and functionality. But I'm part of that rush to engineer a new world that's more focused on equality and nature's health and wellbeing as part of this ecosystem.

[00:04:21] **Mutinta Banda:** That's Geraldine Wharry. She's a fashion designer who studied systems thinking - a requirement at all fashion schools today in 2050. It involves thinking about the whole lifecycle of a garment.

[00:04:30] **Geraldine Wharry:** I ended up actually getting trained in systems design and in transition design. This idea that you could be a designer, you also needed to learn how to create systems in how the clothing would actually be manufactured so that you could contribute to this sort of great transition that we were going through. We reintroduced systems that were mutually beneficial, not just in terms of mutually beneficial within the fashion industry, but the fashion industry as far as its connection to farming and soil health, beneficial to the food industry, to the energy industry and how all of these could coexist.

[00:05:11] **Mutinta Banda:** From seed to plant, fabric to dying, sewing to product, every stage in the lifecycle of a garment is heavily scrutinized today to ensure that it is helping rather than harming our natural environment.
[00:05:25] **Mutinta Banda:** Catherine Martinez-Pardo is a partner with BCG. She has a background in business and economics and works with brands to become more sustainable.

[00:05:33] **Catharine Martinez-Pardo:** It's such an emotional industry. I have not seen yet a sector or industry with the same depth when it comes to emotion. It affects almost every person on this planet. Everybody, in one way or another thinks about what to wear, how to dress every single day in their lives.

Mutinta Banda: In recent decades, consumers began to demand eco-friendly products.

[00:05:58] **Mutinta Banda:** The materials the fashion industry were relying on needed a makeover. Polyester for example is essentially a plastic, made from petroleum, which we all know is very scarce today in 2050. We still see lots of polyesters today but almost all of them come from recycled sources such as clothing and even plastic bottles that have been recovered from our oceans.

[00:06:28] **Mutinta Banda:** Natural materials have been used for clothing since the early days of human civilization, and today in 2050, these fabrics are common.

[00:06:37] **Catharine Martinez-Pardo:** We still see a lot of the traditional materials. We still do see a lot of cotton. We still do see a lot of viscose and these are materials that have been around for tens of thousands of years. But what we see is within even the traditional categories is a massive pivot. We see a shift from virgin materials to recycled materials.

Mutinta Banda: Clothing recycling is available around the globe. When you put your clothing into a recycling bin - whether it is cotton, polyester, wool, or another material - it is taken to a facility where it is broken down, the fibers dissolve and it's put into a liquid cellulose material where it can be spun back into new fibers.

[00:07:19] **Catharine Martinez-Pardo:** And we are not only talking today about a secondhand market but what's amazing is we're talking about a second, third, fourth, fifth, sixth market. It is really becoming an economy in itself of sharing, renting and reusing items. After the first consumer, the product actually will travel to 6, 7, 8 more consumers. So one item can be loved by six to eight people without any quality problems. And it can even be used longer depending on how well the individual consumers treat the products.

[00:07:56] **Mutinta Banda:** For people who still love to follow the newest trends and swap out their wardrobe frequently, renting is a great option.

[00:08:05] **Catharine Martinez-Pardo:** There are people who are extremely fashion forward, who are extremely driven by trends, who have this very deep need to always wear the latest. So they don't wanna own a lot of things anymore because everything that is great today is out of date tomorrow. So they basically base their entire fashion closet or 80% maybe of their closet on renting.

(Catwalk, music, etc.)

[00:08:30] **Mutinta Banda:** Back on the catwalk at Tokyo fashion week, Emiko saunters down the aisle in an Elizabethan gown. It is complete with a collar that fans out from their neck in the shape of a pale grass blue butterfly. The most common species in Japan.

[00:08:47] **Announcer:** Emiko models a piece that would be perfect for a spring promenade. The piece is fully modular and right-to-repair certified. Virtually try it on at home and order before it sells out!

(Walking back to the green room. Sounds of racks of clothing being ruffled through, hairdryers? High heels clicking on the floor, muffled talking.)

[00:09:00] **Emiko Ikeda:** Back to the green room...

(Sound of hangers on a rack.)

[00:09:02] **Emiko Ikeda:** Now let's see... Looks like Poddingtons is filling in for Gushy Gush. Too bad. I was looking forward to trying on their spray-on tights.

[00:09:13] **Emiko Ikeda:** My next piece is full-body yellow rain gear. Poddingtons claims these were made at a recycling facility in Yamaguchi using PET bottles... but the buttons on this have no imperfections at all. Curious to see the story projection.

(Beeping from the wristband.)

[00:09:29] **Emiko Ikeda:** [Gasp] I knew it.

[00:09:35] **Emiko Ikeda:** Poddingtons made these using virgin polyester from black market petroleum products. Some brands can't accept the slight variations you get with recycled materials.

[00:09:50] **Emiko Ikeda:** [Sighs]

(Beeping.)

[00:09:51] **Emiko Ikeda:** I'm going to send the CEO a message through the event platform. I'll give them an opportunity to come clean.

(Soundscape fades out.)

[00:09:59] **Mutinta Banda:** Fashion has suffered from a lack of transparency. Consumers demanded knowledge about

working conditions, wages of workers, and product origin to able to make more ethical choices.

[00:11:07] **Catharine Martinez-Pardo:** When you think about sustainability, you tend to very much focus on the environmental aspects. But especially in an industry like the fashion industry that is so tied into the workforce and the social aspects, it's equally important, if not more important to think about that as well.

[00:10:16] **Mutinta Banda:** But aside from some basic information that used to be put on tags lining clothing, about fabrics, country of origin, and wash instructions, it was very difficult to know much about our clothing.

[00:10:30] **Catharine Martinez-Pardo:** Now we have technologies that really make it quite easy with a phone to scan the garment itself and learn more about how it's made, how it should be washed, how it should be handled, and where it should go in the end of the life cycle. So it's a perfect loop with a lot more love from users in between.

Mutinta Banda: Today, companies are held accountable for the impact of production and for falling below industry standards.

[00:11:32] **Catharine Martinez-Pardo:** Many organizations have faced tremendous fines and removal of their products from the markets, but that has actually had a huge impact of companies changing the way they behave and reducing impact.

[00:11:46] **Mutinta Banda:** Back in the day, brands experimented with all sorts of different technologies to improve traceability and transparency; radio frequency identification tags, QR codes, labels... none of them worked very well. They would be destroyed by natural wear and tear or consumers would cut them out.

[00:12:06] **Catharine Martinez-Pardo:** Today we have fibers who do the job, and we have no problem with that anymore. We just have simply the garment itself that can be connected to a device. So as soon as the garment is made, we can basically in the factory already supercharge it with all the information of its previous life stages, and then we can almost track it live. And as soon as it kind of rolls out of a factory and starts entering the consumer loop, it is becoming a digital twin. So there is a digital version of that product co-living in the cloud that connects to the actual product constantly.

[00:12:44] **Mutinta Banda:** And we know today in 2050, not only do we have digital twins for our products but we also have them for ourselves.

[00:12:54] **Mutinta Banda:** Designers have embraced the opportunity to create fashions for both physical and digital realms. This started initially with avatars, especially in the gaming world but today is everywhere.

[00:13:06] **Geraldine Wharry:** What's definitely been really inspiring for me is something that started in the 2020s in terms of, we started to see a blur between physical and digital designing. So we had some designs that were just so fantastical; inspired by creatures that, it used to be that we could only see those in the digital realm. It wasn't really physically possible to manufacture this. But now with 3D printing and many other technologies, even augmented reality, it completely blurs the line. And so that's created an explosion in terms of the fashion lexicon.

News Clips: Sales of estrogen monitoring t-shirts for menopausal women have skyrocketed in 2029.

[00:13:58] **News Clips:** 2038 saw one of the most difficult growing seasons for cotton on record in the Southwestern United States.

[00:14:05] **News Clips:** Metaverse fashion week 2042 is in full swing with new cheetah and polar bear inspired designs.

[00:14:11] **Mutinta Banda:** Back in the green room at fashion week, Emiko stands in front of a mirror wearing the full yellow rain gear, complete with a hood and boots.

[00:14:22] **Emiko Ikeda:** The CEO of Poddingtons got back to me and said, "Thanks for letting me know your concern. You're paid to wear the clothes as a model in this show, not to be investigating our fabrics. I can assure you that we are committed to sustainability. Kind regards."

[00:14:40] **Emiko Ikeda:** I can't believe the nerve of this person. To write me off like that. I could say nothing. They aren't the first brand to try to lie about their sustainability efforts. Taking a stand is risky though. I could get blacklisted and my career would be down the toilet.

(Sound of walking over to a 3D printer.)

[00:15:03] **Emiko Ikeda:** There's a 3D printer here for brands to create clothes… but I think I could use it to add some imprints to the raincoat. I'm going to do a little bit of on the fly modification.

(Sound of the printer turning on.)

[00:15:13] **Emiko Ikeda:** [Slight knowing laugh]

[00:15:14] **Emiko Ikeda:** That'll show them.

(Soundscape fades out.)

[00:15:15] **Mutinta Banda:** Fashion designs and trends have shifted along with the changing times.

[00:15:23] **Geraldine Wharry:** How we make clothing, how we repair clothing, how we upcycle clothing, how we manufacture has actually injected a ton of self, individual self-expression in clothing. And I feel there's so much more originality today than like a couple of decades ago. That's what fashion is also very much about.

[00:15:44] **Mutinta Banda:** One welcome change is a total breakdown of any rules of the past around gender categories for clothing. No longer are men, women and non-binary people expected to dress a certain way.

[00:15:58] **Mutinta Banda:** We also see people getting more uses out of their clothing, and holding onto items for many more years than we did in the past.

[00:16:07] **Geraldine Wharry:** We had this sort of new movement that was really celebrating imperfection, roughness, things that might look a little unfinished or were unique. We know that there's inevitable wear and tear In certain parts of our garment so we can make these items modular. Those parts of our garment that might get worn out a bit faster than others and detach them.

Mutinta Banda: It's common today to see clothing with patches or other evidence of being repaired, and consumers wear these imperfections with pride knowing it is a symbol of a well-made product that has lasted a long time.

[00:16:48] **Mutinta Banda:** We also see new types of fabrics that allow consumers to wear items once and immediately recycle them.

[00:16:56] **Catharine Martinez-Pardo:** There are technologies that actually allow you to make the fabric almost on the spot. So you basically spray adhesives, together on kind of a mold, and you dry it and you have a product. So the entire value chain, these many steps, spinning, garment, ginning, everything is basically reduced into one. And it also caters immediately to consumer needs. You can make something

very bespoke, very on demand, very ready to use. Either one or many consumers can use it, but it can be recycled right back.

Mutinta Banda: We also see way more technology incorporated into our clothing than ever before. Today clothing that can gather data about things like steps, blood pressure or sleep habits are prevalent. But there are still challenges with these items.

[00:17:43] **Catharine Martinez-Pardo:** We still haven't really figured out today how to recycle tech fibers because there is this kind of electronic element into a natural or garment element. So I think this is still an area where we have to learn a lot in order to kind of scale that and make these type of fabrics more useful.

[00:17:59] **Mutinta Banda:** 3D printing was another game changer for the fashion industry that allowed consumers to take control over the design of their products.

[00:18:08] **Geraldine Wharry:** If you have a 3D printing machine, you have these like flat 3D printing machines that look like old radiators that you can have against your wall and you can input certain plastics that we still have. We just have so many plastics, even from the 2020s. So we just have this ongoing source of permanent materials that we can reuse and we can print t-shirts actually from these 3D printers in our own kitchen.

[00:18:34] **Mutinta Banda:** The steady stream of recycled materials means that we see more locally manufactured clothing than we did before.

(Sound of a storm, also some music still.)

[00:18:46] **Mutinta Banda:** Back at the fashion show in Tokyo, Emiko walks backward onto the runway into a simulated rainstorm complete with wind and lightning projections.

[00:18:55] **Announcer:** And now we get to see the full force of Poddingtons newest rain gear against the elements as we increase the wind and rain tenfold.

(Sound of the storm increases.)

[00:19:06] **Announcer:** It should be no match for this gear...

[00:19:12] **Mutinta Banda:** Emiko turns around and the words "NOT RECYCLED POLYESTER" are imprinted on the chest of the raincoat.

[00:19:19] **Announcer:** fully... recycled... polyester... Umm... ahhh... okay... let's dim the storm a little bit...

(Storm dims slightly.)

[00:19:24] **Emiko Ikeda:** [Yelling] Not recycled polyester! Not recycled polyester! Not recycled polyester!

(Muffled confused crowd about what is going on.)

(Lights turning off. Storm stops. Sound of security guards coming on stage.)

[00:19:28] **Announcer:** Security? Security?

[00:19:29] **Emiko Ikeda:** No more lies! No more lies! No more lies!

[00:19:33] **Announcer:** Hahahhaha, we're sorry for this interruption and we'll be sure to bring you more great pieces from Poddingtons shortly...

(Soundscape fades out.)

[00:19:41] **Mutinta Banda:** Although great strides have been made in recent decades to make the fashion industry more sustainable, we're still managing trade-offs. For example, even though we no longer rely heavily on petrochemicals to create virgin fabrics such as polyester - natural products are also created using resources that are scarce today.

[00:20:01] **Catharine Martinez-Pardo:** So natural fibers very often rely heavily on water. Cotton requires an incredible amount of water to be grown and dyed and then made into a garment. That has not really changed. There's also the aspect that we need to take into consideration of land use. A lot of the natural or animal-based fibers, such as wool or leather or similar fibers, require a lot of space for the animals or for the raw materials to actually flourish and grow. So that is still like an impact that we work very hard to kind of mitigate

Mutinta Banda: Brands are working creatively with waste to decrease the dependency on new materials. They are also finding synthetic alternatives to materials that were made using animal-based products.

[00:20:43] **Catharine Martinez-Pardo:** So waste products from agriculture or from food. And we really learned how to incorporate the things that nobody really could use. So far, we have seen a lot of alternative sources coming in, such as algae or mushrooms that make great materials. And I think one area that is particularly important when we talk about

sustainability are also the lab grown materials that can replace leather.

[00:21:06] **Mutinta Banda:** Emiko sits on a bar stool at a nearby café scrolling media reports on their tablet.

(Cafe soundscape.)

(Sipping sound.)

[00:21:17] **Emiko Ikeda:** The media is having a frenzy over my stunt.

(Sound of pulling out a tablet.)

[00:21:19] **Emiko Ikeda:** Poddingtons stock has plummeted.

[00:21:21] **Emiko Ikeda:** One outlet says "Self-Righteous Emiko Ikeda Will Do Anything to Attract Attention at Tokyo Fashion Week." Ugh.

[00:21:25] **Emiko Ikeda:** There is support pouring in too though.

(Ding.)

Emiko Ikeda: "Emiko Ikeda Demonstrates that Principles are More Important Than Profits". Nice.

Emiko Ikeda: What's that… [gasp]. No way. The Creative Director of Ancient Cotton just reached out - says she likes my guts and wants to meet me next week.

Emiko Ikeda: I've got to get home to gather my portfolio together, a new haircut… what will I wear to meet her? [Happy giggle]. This could be my big break finally!

(Soundscape fades out.)

[00:21:38] **News Clips:** Fashion brands are cleaning up their acts when it comes to human rights after 5 companies had to shut their doors for violations in 2028.

[00:21:47] **News Clips:** 2035 marks one of the lowest yield years on record for virgin leather production.

[00:21:53] **News Clips:** Consumers demand updates to popular clothing traceability apps after some companies are caught hacking the system in 2042.

[00:22:00] **Mutinta Banda:** Today in 2050, we're still continuously working towards how the fashion industry can

improve its sustainability. But we've come a long way in recent decades to reduce the impact on the environment.

[00:22:13] **Geraldine Wharry:** So we're really working around an industry today that is fully dedicated to circularity and transparency and obviously as part of this biodiversity and regeneration. So that's meant a whole domino effect of commitments in terms of what our jobs even are in the 2020s. It just so happened that we also had a huge wave of automation and artificial intelligence, which meant that a lot of our jobs were changing anyway. And that's something we completely underestimated in the 2020s.

Mutinta Banda: Brands had to start working together so that they could learn from each other.

[00:22:57] **Catharine Martinez-Pardo:** We have now moved away from competitiveness to a more collaborative industry. So doing things together, understanding that there is actually value in learning, sharing, collaborating, and that that allows us to unlock much more impact.

Mutinta Banda: Looking back, there were key inflection points along the way that led the industry on the path to where we are today.

[00:23:23] **Catharine Martinez-Pardo:** I think regulation was one of the biggest unlocks in this industry that has really changed the way people had to think about doing their business. I think the second is the availability of raw materials. Raw materials have been becoming scarcer and scarcer and scarcer. And also the demand of consumers. Consumers want products now. They don't wanna wait 12 months. They don't want anybody to prescribe a trend. They want whatever they want now in the right size, in the right place. And I think taking these drivers together unlocked the snowball effect and a really dynamic change of the industry.

[00:24:05] **Nick Howard:** You've been listening to Climate Vision 2050, a podcast from BCG that explores how the world radically reduced carbon emissions and saved itself from climate catastrophe. Our narrator, Mutinta Banda [Moo-tin-tah Bahn-dah] is played by Atibo Onen [Ah-tee-bow Oh-nen]. Model Emiko Ikeda [Em-eek-oh eek-kay-dah] is played by Akiko Fujiwara [uk-EEK-o foo-jee-WAH-ruh]. You heard from Catharina Martinez-Pardo [Cat-a-ree-na Mar-tea-nez Par-do], BCG partner and sustainable fashion expert as well as Geraldine Wharry [Ger-all-dean War-ee]; a fashion futurist.

This podcast is produced in collaboration with Lower Street; a full-service podcast production agency that creates amazing shows for brands that want great not good.

BCG is a global consulting firm committed to climate and sustainability action. We understand there are many possible futures, and we hope you enjoy our journey through some of them in this series. Learn more about our work on climate and sustainability at BCG dot com slash climate.