

- Baratunde Thurs...: [00:00](#) If you were to give a sustainability report to the technology industry, what grade would you give
- Ralph Loura: [00:06](#) At the Mumble? We're not even in the classroom.
- Baratunde Thurs...: [00:21](#) Welcome to Lenovo Late Night it, where I sit down with the top minds in tech for unfiltered conversations about how technology impacts humanity. Tonight's episode is about sustainability. As it turns out, we haven't always been the best stewards of the planet. I know, I know. I'm as shocked as you are. Cause I've been cutting up those plastic six pack rings since I was eight, and we're still in trouble, but that's okay. Our guests tonight are two of the world's leading experts on sustainability and tech, and they're gonna tell us what businesses and individuals can do to avert the impending apocalypse. I'm so excited to have Dr. Lucas Joppa with us tonight. Featured and Fortune Magazines 40 under 40 list. Lucas was Microsoft's first ever Chief Environmental officer, a different kind of C E o I wonder if he took advantage of that. In that role, he led their worldwide sustainability strategy.
- [01:12](#) He currently serves as senior managing director and chief sustainability officer at hav Investments, a technology focused private equity firm. He's also one of the world's most highly cited researchers in the field of ecology. Also joining us is Ralph Laura, chairman of the Board of Sustainable it, a nonprofit organization led by tech executives that advanced sustainability all around the world. Ralph is a seasoned business leader who provides support, guidance, and strategy to companies across industries ranging from tech to life sciences and e-commerce to consumer goods. He's currently senior vice president of IT and Chief Information Officer for the Photonics Company Momentum. Ralph Lucas, welcome to the table.
- Ralph Loura: [01:53](#) Thanks. Thanks. Great to be here.
- Baratunde Thurs...: [01:54](#) Sustainability in technology. I wanna start with the bad news. What's the bad news?
- Dr Lucas Joppa: [02:00](#) Well, the bad news is it's not just in technology. The world has a sustainability challenge ahead of it. Anybody who's been reading the news knows climates are rapidly changing. Yeah. They're changing rapidly because of actions that humans have taken since the dawn of the Industrial Revolution. And what science is telling us now and what the world is quickly getting behind mm-hmm. <affirmative>, is that we've got a few decades till 2050 to fundamentally balance the world's carbon

books. We have a few decades to ensure that all of the carbon that humans put into the atmosphere, humans take out. That means we have to reduce the emissions of carbon into the atmosphere as much as possible, and then work on taking the rest of that carbon out. Huge, huge socioeconomic transformation ahead of us. Lot of risk. Uh, but also if you're, if you get excited about markets, if you get excited about technology Yeah. If you get excited about economies, huge growth opportunities as well.

Ralph Loura: [02:58](#) I also think the risk facing the planet right now is individuals thinking someone else is gonna solve the problem. Mm-hmm. <affirmative>, right? So we're all sitting around going, well, you know, I'm, there's smart guys like Lucas. He'll figure it out, Mike, I can just keep driving my car and using my computer and leaving the lights on and turning my airway down and it's all gonna be fine. Hmm. Um, and it isn't. Right. So we all have to figure out how to play a role. Unfortunately, while it is everybody, tech is playing a disproportionate role in a bad way. Okay. Um, in creating a problem. Right. So since 2007, uh, the percentage of energy consumed and carbon created, uh, by the tech sector has increased two and a half times.

Baratunde Thurs...: [03:41](#) That's the wrong

Ralph Loura: [03:41](#) Direction. It's the wrong direction. Right. Yeah. And it's getting worse. Right. So things like ai, which is great mm-hmm. <affirmative> and has an application in this space sometimes.

Baratunde Thurs...: [03:49](#) Great.

Ralph Loura: [03:49](#) Yeah. Sometimes big ass ones. Uh, there's a few people worried about that. You know, we've seen the Terminator movies, like things, things. Documentaries. Documentaries. Yeah. Yeah. Yeah. One of the problems with, you know, kind of that, that escalating pace is some of these new tools consume a lot of power. Mm. And unless we figure out how to power our power differently Yeah. How to work differently in the way we, we we use technology, we can continue to make the problem worse.

Baratunde Thurs...: [04:13](#) Is there good news?

Dr Lucas Joppa: [04:15](#) Yeah. I, I would say the good news is that there's the flip side of, of what Ralph just talked about. So if you look at, you know, I talked about, uh, how the world needs to take, you know, all the carbon out and, and and, and what a

- Baratunde Thurs...: [04:26](#) Major
- Dr Lucas Joppa: [04:27](#) Deadline. Yeah. And a major deadline. That's called a net zero, you know, deadline. Mm-hmm. <affirmative> net zero carbon economy. So at the core of any net zero plan mm-hmm. <affirmative> sits a really simple framework. Okay. It's to rapidly decarbonize the electricity grid. We'll talk about that, I'm sure mm-hmm. <affirmative>, but rapidly decarbonize the electricity G grid, and then race to electrify, digitize and virtualize then as much of our economy as we can. And so the great thing about technology Yeah. Is it consumes electrons. The bad news is that right now the vast majority of the world's electricity is produced through activities like burning coal. The good news is that in the future, the vast majority, if not all of the world's electricity is going to be produced through zero carbon means solar, wind, hydro, and the like. It
- Baratunde Thurs...: [05:22](#) Seems like you just made a plug for digitizing everything. Did I hear that inference correctly? I think so.
- Ralph Loura: [05:29](#) So I'd be, I'd be a little careful with that. Right. So Yes, and I think the, uh, we have to be thoughtful about how we move forward, right. Because one of the things we're seeing as well, so great digitize everything mm-hmm. <affirmative> on the other hand, um, our e-waste stream is getting bigger. Right. And bigger, faster and faster. And unfortunately, less than 18% of e-waste is actually being recycled today. Mm-hmm. So we've got a big opportunity here. A big problem. Yeah. And an opportunity.
- Baratunde Thurs...: [05:56](#) Is it a problem we will ever effectively address? I remember one of the selling points of digitization, even at the low end of replacing paper, was less waste, more efficiency, but then we just do more stuff and we leave the machines on all night. So we are actually burning more carbon potentially than when we just shuffle papers around.
- Dr Lucas Joppa: [06:15](#) Yeah. I mean, but there's a, there's a formal name for that called Devin's Paradox. Right, okay. Which is the more efficient that we make things. We expect that the amount that we use will go down, but in fact it goes up.
- Baratunde Thurs...: [06:26](#) What did Jev do to deserve that name?
- Dr Lucas Joppa: [06:28](#) I mean, you know. Yeah. Well it's funny cuz he was an economist tasked with looking at the, the expected growth or not of coal Okay. Of coal extraction and, and, and, um, and

electricity generation from coal, it was expected that that would go down mm-hmm. <affirmative> because we were getting so efficient at it. But history has shown that it went exactly the opposite direction.

- Ralph Loura: [06:52](#) So
- Baratunde Thurs...: [06:52](#) How are we not gonna do that in the race to digitize and make more efficient through, you know, clean electron using technology?
- Ralph Loura: [06:59](#) Well, this is part of what sustainable it.org is trying to create, is awareness, uh, standards and research around how to think about things differently. So, uh, uh, for companies over a billion dollars in revenue, half of the CIOs currently have some sort of ESG initiative, uh, environmental sustainable and governance initiative that they're tracking toward. So I'm like, well, only half. Yeah. Like, like you're on the wrong. Which, which side of history do you wanna be on the right side of the wrong side? Yeah. Like, what are the other half doing? Why aren't they involved? And so we're trying to engage and
- Baratunde Thurs...: [07:31](#) Why aren't they involved?
- Ralph Loura: [07:33](#) Well, I, I, so I think there's this, this, it's somebody else's problem math, right? I think there's PE people frankly are a little bit worried about, you know, I, I don't know, imposter syndrome. Like, I'm gonna stand up as a CIO and go, I'm an expert on, you know, coal and carbon and electrons. Well, maybe, you know, go stay in the data center. Maybe you're not an expert. Well, I think it's time for everybody to step up, learn as you go. Yeah. Take a risk. Put your hand in the ring. Um, you know, back in the day, 10, 15 years ago, back in the day, in the day back in the
- Baratunde Thurs...: [08:03](#) 10 years ago
- Dr Lucas Joppa: [08:04](#) Ago, <laugh>, who's that? Early in the early
- Ralph Loura: [08:06](#) Two thousands. Yeah. Um, you know, people used to talk about it and most CIOs had comments like, I want to see that the table. Right. They, because they weren't in the C-suite, they weren't in the,
- Baratunde Thurs...: [08:17](#) According to the CFO and the coo.

- Ralph Loura: [08:19](#) Right. Okay. And so my advice at the time was, if you want to seat at the table, then pull up a chair mm-hmm. <affirmative> and, and the the comment meaning have an opinion. Yeah. Like, get involved. Don't wait for someone to give you an engraved invitation, like add value. And you're, they're gonna want you at the table. If
- Baratunde Thurs...: [08:34](#) You were to give a sustainability report to the technology industry, what grade would you give
- Ralph Loura: [08:40](#) At at the moment? We're, we're not even in the classroom. <laugh>. We're, we're, we're taking it past foul. Right. We're, we're not ready for the, right now it's, we are early days where most people are just starting to figure out they should play a role in trying to figure out what that looks like. Um, so, so I don't think we're even at the point where we've, we've taken our first test
- Baratunde Thurs...: [09:00](#) Relative to other industries as well. Like where does tech live in terms of sustainability?
- Dr Lucas Joppa: [09:05](#) I give tech an a for ambition at the very, at the very first he's
- Baratunde Thurs...: [09:09](#) The nice teacher. Yeah. We
- Dr Lucas Joppa: [09:10](#) Mean well yeah. Mean well, but, you know, a for ambition, but definitely not an a for execution. Um, but I can't find a way to like Alliterate Alliterate that. Yeah, exactly. But I think that if you look at the most ambitious sustainability goals in the world mm-hmm. <affirmative> almost entirely come from tech.
- Baratunde Thurs...: [09:30](#) I sense a general optimism about what might be possible as we move forward. We're gonna learn more, we're gonna deploy more solutions, we're gonna get better at this. We're gonna have more incentives to balance our carbon assets and liabilities. But some of the resources we need to get better are becoming more scarce. Mm-hmm. <affirmative>. Mm-hmm. <affirmative>. Let's talk about water. Mm-hmm. <affirmative>. Right? We need water to cool our data centers and all kinds of things, but we're running out of water because the environmental conditions are getting much worse. How much of our assumed progress is gonna be challenged by the lack of resources we need to pull that progress off.
- Ralph Loura: [10:05](#) O one of the answers is not to treat water like a renewable resource. Mm-hmm. Treat it like a limited fixed, you know, uh, resource. Yeah. So recycle it, reuse it, make sure you're

capturing any, any, you know, so I can cool a data center with water as long and then I can pump that back around. Yeah. And let it cool. And then do it again. Like, I don't need to pull it out of a river and then, and then put it downstream as a, as a, as a contaminated product. There's a bunch of things I can do very differently. Hmm. And that's part of what, as we look at our operations, uh, as a company, it's, Hey, how do I take literally everything I consume and ensure I'm like it, like I'm, I'm using it. I'm reusing it. Yeah. I'm ensuring I capture every molecule and I'm not wasting anything. Right. And some people think, well, that's gonna cost a lot of money.

Baratunde Thurs...: [10:53](#) Or, you know what costs a lot of money, no planet. Well, very expensive. True.

Ralph Loura: [10:58](#) But, but even in the short term, it's the, the data says, uh, companies that have, uh, good discipline around E S G mm-hmm. <affirmative> are 2.6 times more profitable.

Baratunde Thurs...: [11:10](#) That's a lot.

Ralph Loura: [11:11](#) Yeah.

Baratunde Thurs...: [11:11](#) Yeah. Well, listen, it's not just gonna be experts like you, it's gonna be everyday people a little bit more like me and, and all the folks watching this who are gonna help us get to where we're going. So we sent our producer out into the real world on a tech walk to see what their thoughts are about sustainability.

Alex Stone: [11:26](#) Each year humans discard more than 100 million tons of electronic waste, which is why I only replace my phone every other month. Really. Whose responsibility is it to make sure that tech is sustainable? We ask people on the streets of New York what they thought. What does sustainability mean to you? It's all about looking off the environment. Do you think that the tech industry has an obligation to protect the environment? I think

Interviewee 1: [11:50](#) Every individual has an obligation to the environment and every individual company and corporation and, uh, tech universe. Sure.

Alex Stone: [11:58](#) Why do you think that?

Interviewee 2: [11:59](#) Um, so they don't ruin the environment because it helps us. And like the trees, it helps us breathe.

- Interviewee 3: [12:07](#) We all got responsibility to do that. Whether we want to do it or not, it's a different
- Alex Stone: [12:12](#) Thing. What percentage of electronic waste do you think gets recycled? I'm gonna guess 35%. It's actually only 17 and a half. Oh, that's bad. There are 30 different minerals in a cell phone.
- Interviewee 4: [12:22](#) Yeah. Little bit of gold, a little bit of platinum, a little bit of copper, a little bit of lithium in the battery. Cobalt. They're not unlimited. So we're go, we're gonna run out. Every time someone throws out a cell phone buys a new one. It's a, it's a little bit more. Every time there's a new ev car, every time there's a new shopping mall instead of a park, we're that much closer to what's called a, a rolling blackout. Cuz the grid is old. It's an old city. Maybe like New York.
- Interviewee 1: [12:42](#) I don't believe people react to anything negative unless it's right in front of them. Like death, like smoking, like everything else. Unless it's right in front of them.
- Alex Stone: [12:51](#) How many years do you think we have left as a species?
- Interviewee 5: [12:56](#) We have time. We have a lot of time. Like I know that, you know, gas will run out and, you know, all of things will happen. But, uh, we have like th thousand, at least a thousand years. Are
- Alex Stone: [13:05](#) You concerned that if the humpback whales go extinct, an alien probe will threaten the earth? Like in Star Trek four, the voyage home? No.
- Interviewee 2: [13:13](#) Never watched it. Don't plan to.
- Alex Stone: [13:15](#) Can you do Scotty <laugh>? I thought it think you could ticket any anymore cup. That's amazing.
- Baratunde Thurs...: [13:23](#) Uh, alright. So I'll tell you what jumped out to me was the random New Yorker who understood all the raw elements in a cell phone. I thought
- Interviewee 6: [13:30](#) Everybody was pretty well educated, but Yeah.
- Baratunde Thurs...: [13:33](#) Yeah. So yeah. But what did jump out to you from any of that? Any, any kind of notes of relevance for our conversation?
- Ralph Loura: [13:37](#) Well, I mean, typically like most people overestimate, oh wait, we gotta be recycling what like 35, 40%. Like, it's, it's good, right? Yeah. We're all good. I've been, you know, cutting the,

those, those plastic rings since I was eight years old. It's all good, right? Yeah. We're, we're, we're. So I think most people overestimate what's really happening and even very well educated New Yorkers know a bit about this, are are, are maybe a bit shocked to find out how little we're actually doing today.

Baratunde Thurs...: [13:59](#)

I think our imaginations around where the solutions live, many of us assume it's around hardware. It's around making more efficient processors. It's about, uh, automated, you know, powering up and down based on demand at that time. But software itself can be very inefficient and energy consuming. Is there such a thing as greener code? And what can we do when even the way we design software to, to lower the emissions associated with those repositories, with that compiling and everything else that happens with

Ralph Loura: [14:27](#)

Code, you know, back in the memory was scarce. Yeah. So coders got really good at limiting the memory footprint. Yeah. Then, you know, and then network bandwidth. Okay, I'm gonna get really good about with Codex that do compression and other things to Right. Limit bandwidth then. Okay. Bandwidth is free now. So if the constraint ends up being, we're gonna be constrained around energy consumption. Mm-hmm. <affirmative> coders can get really good at modeling and behaving in a way that drives that kind of kind of economics. And there are a bunch of people out there, there are startups out there that help you manage your cloud use. So all I can have to do is basically take that same algorithm, that same code mm-hmm. <affirmative> and pivot toward, yeah. Okay. Not just cloud consumption, but what if I optimize toward energy as a variable? Yep. You know, it's, the code's already there. Yeah. We just have to give it the right input. Yeah.

Dr Lucas Joppa: [15:10](#)

If you look at like what's happened with the cost of storage Yeah. It's absurd. Which it's so low. Right. Which means that most people just don't ever delete anything. Ever Look

Baratunde Thurs...: [15:21](#)

At my photo library for evidence. Yeah.

Dr Lucas Joppa: [15:23](#)

Yeah. And so people have a word for that. It's called dark data, right. Where it's just like, Hey, these are data points that were created once and never accessed again. And if you look at the, you know, I, I will, that's

Baratunde Thurs...: [15:34](#)

My email

- Dr Lucas Joppa: [15:35](#) <laugh>. Yes. Yeah. I'll try to put that in. Yeah. And so I'll try to put that in the context of like carbon, since we're talking about it. Like the amount of like dark data that's produced every day is the equivalent of like 3000 round trips from New York to London every day of carbon emissions. Mm. And that's not important work that we're talking about. Yeah. The economy taking a hit, it's like useless. It's wasted. It's just wasted. And what the Green Software Foundation has done, I think really at the core of it, you know, there's design principles and then all this other stuff. But super simple framework or elder algorithm called S sci software, carbon intensity use
- Baratunde Thurs...: [16:14](#) It or lose it <laugh>. Yeah. So I, I want that kind of knowledge pushed to someone like me. I, I want mm-hmm. <affirmative>, my Gmail client or whoever operates my email to say, you've been hanging on to this stuff for a decade. You haven't opened it. Let's just zip it, archive it and put it somewhere in a low energy use zone because we're maintaining all this disk spending for something you never use. That's the use it or lose it kind of algorithm I want for my life.
- Dr Lucas Joppa: [16:35](#) And that is one of my frustrations with the tech sector is like, I'm not sure I need an avatar when I'm talking to you on a teams call. Yeah. Like, I don't know why we wouldn't just talk. Maybe I need an avatar in a world that only avatars live in, but you know, but companies are spending a lot of time on features like that. Mm. But I, you know, I do this when I go through my, uh, when I go through my photos on my phone, I'm like, well there's, so I wanna delete 'em cuz I feel bad. But there's so many Yeah. And we know there are easy ways to surface. Exactly. Mm-hmm. <affirmative> like you just said, emails, et cetera. You know, when Outlook says, you know, you have this many emails that like you have. And I'm like, well thanks, but I wouldn't mind a little bit more help.
- Baratunde Thurs...: [17:28](#) Help me do something
- Dr Lucas Joppa: [17:29](#) About it. Should I just go delete all my emails? Yeah. I don't know. Like literally there's like hundreds and hundreds of thousands of them. It's
- Baratunde Thurs...: [17:36](#) Almost like we need do it software to help us with this problem.
- Dr Lucas Joppa: [17:39](#) Yes. Yeah. And I do think that as motivations shift, you'll see companies making different choices about how they prioritize which features Yeah. To build. And I think if I were to level one criticism against the tech sector, it's that they're oftentimes

they prioritize features that are less important Yeah. To the user when it comes to sustainability. Yeah. Offshore that cluttering into data centers. Yeah. And then through

Baratunde Thurs...: [18:12](#) What if we had to physically live with our data? There you go. We would delete, delete, delete. So fast. You

Dr Lucas Joppa: [18:17](#) You couldn't get to the

Baratunde Thurs...: [18:18](#) Kitchen. Exactly. You couldn't

Dr Lucas Joppa: [18:19](#) Get to the bathroom. There'd just be bites and you know, bits all over

Baratunde Thurs...: [18:22](#) The place. And how much carbon could we reduce from getting rid of all that redundancy? Yeah. Um, I wanna play a game with you. Are you down?

Dr Lucas Joppa: [18:28](#) Sure. Sure. Well, what's the game

Baratunde Thurs...: [18:30](#) <laugh>? I expect blind enthusiasm. And you are proceeding cautiously. We'll give you a pile of words on cards. One of you will hold those words up on your forehead. The other person will issue clues to the holder to get that person to understand what the word is without saying the word itself. Ralph will start with you being the card holder. Okay. You're gonna be the guesser Lucas. Start in 3, 2, 1, go.

Dr Lucas Joppa: [18:54](#) Dead dinosaurs,

Ralph Loura: [18:56](#) Uh, oil, uh, close

Dr Lucas Joppa: [18:57](#) Gas, it alliterates,

Ralph Loura: [19:00](#) Uh, fuel oil. Oil, uh,

Dr Lucas Joppa: [19:02](#) Oil and everything else.

Ralph Loura: [19:04](#) Uh, oil and gas,

Dr Lucas Joppa: [19:05](#) Oil. Even mo

Ralph Loura: [19:08](#) <laugh>. Uh, it's carbon oil and carbon oil and fuel and gas.

Baratunde Thurs...: [19:12](#) Encourage.

Ralph Loura: [19:12](#) We burned 30 seconds Maybe. Should we

Baratunde Thurs...: [19:14](#) Move? Should we we should go. Let's go to the next one.

Ralph Loura: [19:16](#) Stop to the next one.

Dr Lucas Joppa: [19:18](#) Um, like doing the laundry with fake sustainability commitments.

Ralph Loura: [19:23](#) Uh, green washing.

Baratunde Thurs...: [19:24](#) Nice. Yes. Keep going.

Dr Lucas Joppa: [19:26](#) How you balance your carbon books after you reduce as much as

Ralph Loura: [19:30](#) Possible. Uh, with carbon credits. With carbon offset

Baratunde Thurs...: [19:32](#) Chrome. Yes. Let's do another one.

Dr Lucas Joppa: [19:34](#) One of the main sources of renewable energy,

Ralph Loura: [19:37](#) Wind, solar. Uh,

Baratunde Thurs...: [19:40](#) He did it the first time. Let's

Dr Lucas Joppa: [19:41](#) Go. All right. A more intelligent way of, of distributing energy

Ralph Loura: [19:46](#) Using batteries. Uh, um, an intelligent, great, smart grid. Ooh, who nailed

Baratunde Thurs...: [19:51](#) It. Look, I love seeing your mind work on that. Do you wanna check that first one and see what that was? That was fossil. The whole category.

Ralph Loura: [19:59](#) The whole

Baratunde Thurs...: [20:00](#) Category. Course. That was a good round. That was a good round. Was it?

Dr Lucas Joppa: [20:03](#) Yes,

Baratunde Thurs...: [20:03](#) It

Dr Lucas Joppa: [20:03](#) Was. I have to say that I'm

Baratunde Thurs...: [20:05](#) Not lying to you. It was a good round. I enjoyed myself. Yeah. All right, Lucas, you were the card holder now in 3, 2, 1. Begin

Ralph Loura: [20:15](#) One of these on a basketball and it's not a one, it's lower than that.

Dr Lucas Joppa: [20:18](#) It's not a

Ralph Loura: [20:19](#) One blanket. It's it's not one, it's not two, it's not three. It's lower than that.

Dr Lucas Joppa: [20:23](#) Zero. Uh, net zero. Whoa.

Baratunde Thurs...: [20:25](#) Whoa. I see. Go

Dr Lucas Joppa: [20:26](#) There. Alright,

Ralph Loura: [20:27](#) <laugh>. Uh, if you had this black study material on your foot and you took a step, it would be a, it's how you measure the company's consumption and creation Footprint. Yes. What kind of footprint? Carbon footprint.

Dr Lucas Joppa: [20:38](#) Yeah.

Baratunde Thurs...: [20:39](#) I like that. Teamwork.

Ralph Loura: [20:40](#) This is a long phrase people will say about conserving water. And when you're, when you're using the bathroom, whether it's number one or number two, there's this rhyming phrase.

Interviewee 7: [20:50](#) If it's yellow, let it mellow. Yes. If it's brown, flush it down. Damn.

Baratunde Thurs...: [20:55](#) Nailed it. Oh my goodness. I've got kids. That was amazing. Okay, let's stop celebrating. Play. All right.

Ralph Loura: [21:00](#) There's reuse and there's recycle.

Dr Lucas Joppa: [21:02](#) Yeah.

Baratunde Thurs...: [21:03](#) Nice. Let's get one more in there. Uh,

Ralph Loura: [21:05](#) If you're capturing the power from the sun and you're storing it solar, solar power, you have 'em in your skin, your body is made up of solar

Dr Lucas Joppa: [21:11](#) Cell. Yes. Woo.

Baratunde Thurs...: [21:12](#) You're good.

Dr Lucas Joppa: [21:14](#) You

Baratunde Thurs...: [21:14](#) Had a great partner in this round that was fun. Better than he was to you. I'll put fun. He also did the first round, so you got to learn from

Dr Lucas Joppa: [21:21](#) Apologize.

Baratunde Thurs...: [21:22](#) Mistakes. Well done. Thanks for playing the game with

Dr Lucas Joppa: [21:25](#) Us. That was good.

Baratunde Thurs...: [21:26](#) Let's get these cards outta here.

Dr Lucas Joppa: [21:27](#) Let's never play this game again.

Baratunde Thurs...: [21:29](#) <laugh>. So what are your thoughts about blockchain and the, the building blocks of web three as a big element of the future of technology and how that can also be sustainable? Or can it be,

Ralph Loura: [21:40](#) So I'll just go on record. I'm not a fan, right. So I've not a fan, I'm not been a shots fired, I'm not understood. Blockchain seems like from the beginning it's been a technology looking for a problem. Mm-hmm. The obvious things that are really wrong with uh, blockchain one is this whole proof of work problem. And, and, and moving to proof of stake is not necess. It's better.

Baratunde Thurs...: [21:58](#) Doesn't, I mean 9.99% better

Ralph Loura: [21:59](#) Right. But it doesn't necessarily make all the problems go away. Mm-hmm. And then the other, the other problem is when you move to proof of stake, you, you're also taking away some of this big value, the, the supposed value of blockchain, which is hey kind of anybody, this is a distributed network, anybody can play. What's happened anyway is there are fewer and fewer well funded, well orchestrated mining operations that actually mine most of the coin anyway. Mm. So it isn't truly distributed. It's a few big players who kind of control what's happening. You know,

Dr Lucas Joppa: [22:28](#) You had this golden opportunity to host a tech show that didn't talk about

Baratunde Thurs...: [22:34](#) <laugh>

Dr Lucas Joppa: [22:35](#) This topic, but here we,

- Baratunde Thurs...: [22:37](#) We are I squandered it, you know,
- Dr Lucas Joppa: [22:39](#) But I put that on you. Not uh, not us. So here we are. It's a little depressing that what people call the most, you know, transformative technology, innovation of our time is literally a guess and check for loop that we were taught in like elementary school computer science to never use. We are taking one of the most advanced algorithms we've ever come up with in hashing functions in crypto cryptography. The reason I say it's advanced is because it's extremely hard to crack. Yeah. And then we are just guessing what the answer is over and over. And the people who came up with those hashing functions have got to be rolling, is just like, oh my God, this is exactly the reason I didn't invent this. Yeah. Right. And, and at a time we're using precious resources, electrons that are flowing across grids that are barely stable as it is to provide, um, uh, utility to people around the world. So I think that that's kind of crazy. But then on the database side, yeah sure. There are certain things about immutable records that I think are going to be very powerful as we go.
- Baratunde Thurs...: [23:56](#) Is there anything else that either of you wants to add to our discussion about sustainability and it
- Ralph Loura: [24:04](#) Within technology? There's always this. Well, you know, we talk about data. Oh, I can't get started on this project cuz my, I gotta clean my data first. It's not clean. I can't get started. Uh, I can't do, I can't go start on my mobile thing path because a bunch of my apps can't be mobile. I can't start, I can't move to the cloud because I have some stuff that has to be on-prim. We're never gonna be, in a perfect world, yeah, you're never gonna be absolutely ready to tackle sustainability. So start where you can start, you know, you start where you are, you take a few steps, maybe make a mistake or two, take a few more steps and then iterate.
- Baratunde Thurs...: [24:36](#) Yeah. A marathon starts with the first step. Y'all have been incredible. Thank you so much for coming to the table. Thanks for having us. And that's it for tonight's episode of Lenovo Late Night. It thanks to our guest, Dr. Lucas Joppa. And Ralph Laura. I'm baritone Day Thurston and I'll see you next time from the safety of my off world, biodome Peace.