Dallas

Hello, and welcome to episode four of the Innovate UK KTN Geo for Earth Podcast. I'm Dallas Campbell. I'm one of your hosts, I'm a science and technology television presenter.

Suzie

And I'm Susie Imber, a space physicist and we'll be with you throughout this series, chatting with some of the finest minds about all things related to climate change.

Dallas

Yes, indeed and today's finest minds are Andrew Zolli, who's the Chief Impact Officer for Planet, a company specialising in Earth observation data, and Titus Letaapo, the founding member of the GEO Indigenous Alliance, and is a champion of the community conservation model in Northern Kenya.

Suzie

In this episode, we'll be talking about empowering and supporting indigenous communities to support the preservation of the local ecosystem, and to adapt to the changing world that we find ourselves in. Maybe we should ask our guests to give us a brief introduction to themselves as we kick off, just so they can introduce themselves to our listeners today.

Titus

Yeah, thank you, everybody. My name is Titus Leetapo, I'm a Co-Founder of Indigenous Peoples Alliance, that was founded by indigenous representative at the GEO Canberra ministerial summit in 2019, in Canberra, Australia. Their mission of the alliance is to protect and conserve indigenous cultural heritage by using other observations, science and data or technology to create knowledge, base that sustain the Earth we live on. And again, also to support the local indigenous communities. I also work with an indigenous organization called the Sahara Foundation, which is working towards supporting the Indigenous peoples, the Samburu community, in conserving the environment and also finding alternative sources of livelihood, given the fact that climate change is affecting pastoralism and the movement of livestock and wildlife.

Dallas

Great, thank you very much, Titus. Andrew, tell us a little bit about Planet, this is this extraordinary organization that you work for, or run? Tell us what Planet is and tell us what you do there.

Andrew

So I'm the Chief, what we call a Chief Impact Officer at this organization. Planet is best known for having designed and built and deployed and operating the largest constellation of satellites that look at the Earth. Today, hundreds of satellites that every day image the entire terrestrial landmass of the Earth and the near oceans at a little more than three meters per pixel. And then we operate a second constellation that can zoom in anywhere on the Earth, at up to 50 centimeters per pixel, when we see things in that daily take of the whole Earth that are important or intriguing, or might be pre-indicators of important change. But this satellite system sees essentially every forest, every field, every city everywhere, every day, and when we use the tools of machine learning and artificial intelligence and remote sensing science, we can extract signals from all of that imagery, it's on 25 terabytes of data a day.

Dallas

We talk about Earth observation all the time, and we kind of get a bit blase about it and then somebody explains to me, again, about Earth observation, I was blown away, again, the fact that you can see all of the earth, like the whole thing and you can zoom in.

Suzie

Every day, at three meters. My question for Andrew though is tell me a bit about Chief Impact Officer, what is your role there? What does that role involve?

Andrew

Well, you know, the thing that's interesting, first of all, something non-technical about the things we do. The first thing to say is we're a mission led enterprise, we actually started with a mission, not a business and the mission is to use space to help life on Earth. It was predicated on this observation that we're entering a century of extraordinary volatility and disruption, which translates directly into the kind of pain and trauma and disruption to people's livelihoods, to their sense of coherence and integrity, to their ability to flourish on the Earth. And in a situation like that, when we are facing challenges that are literally bigger than our cognition, we need tools to help effectuate, to shift toward a more deeply sustainable and regenerative way of living on the Earth. In order to do that, you know, you need systems that help you see. So, what I think of as, we're building a planet is kind of a big moral mirror that we hold up to humanity, that helps us see our behaviours and see change really in context, so that we can take effective action and all of the ways in which we do that that tie to things like biodiversity, climate, sustainable development, human rights, humanitarian work, in one way or another, I help coordinate those activities with my team across Planet and we work with hundreds and hundreds of organizations in all of those sectors, to help drive reductions in deforestation, to help indigenous communities take effective action and to bolster their guardianship of the world's most vital ecosystems, and to improve the kind of information asymmetries that often

happen in those communities, where very moneyed and powerful interests have more and better information than the communities who live in those places.

Dallas

There was a phrase you used 'the moral mirror' which is like an extraordinary way of describing it, because, well, you know, you have a tool, but I suppose it is the the moral high ground, literally the moral, where do the sort of morals come in, I suppose?

Andrew

Well, one way to think about it is that we know that information is power and data is really unrefined information. So by the sort of transitive property, you can think of data as unrefined social power. If you are working with and producing information that can help people take informed and effective action, that can help hold people who are taking actions that are damaging to the Earth to account, you have a moral responsibility to ensure that, that information is as widely accessible to as many different people, in formats that can be used by as many different people.

Dallas

Presumably though, the moral thing is the question, you provide data, but data is only as good as the morals of the people who then use the data, because there are bad actors who might want to use the data to do terrible things. So, you're not the moral arbiters of this, you are just providing information and whatever happens to that information is down to politicians and who else?

Andrew

Maybe, because I think, let me give you a metaphorical perspective. You know, scientists that study animals that swarm, so animals like bees, and fish and humans. Why do we all come together in clusters? If you think about it, especially for, you know, the bees and fish and birds of the world, being together in one place is kind of risky, because if you're subject to predators, you're clustering all of the predator's meals in one place. So why do animals do that? Well, a big part of it comes down to what's called the many-eyes-hypothesis. This is a hypothesis that says that when all the animals are swimming together or flocking together, they're able to see in all directions, much more than any one of them alone. And similarly, if we can distribute information, in such a way that many actors have access to it, there's a deterrence effect. If you know that you're being watched, you may be less likely to cut down that forest. If you know you're being watched, you might be a little less likely to engage in illegal mining. Those forces that are responsible for holding people to account and for maintaining the order of systems have a much better tool for going exactly where they're most needed. So, similarly we believe that when many, many, many actors have eyes on a situation, that there is a much greater chance that the right kind of ethical behaviour will occur, because transparency is the first step in accountability.

Suzie

I think that's a great analogy, I like it.

Dallas

Let's bring in Titus, I'm interested, so Titus, I mean, you know, like everywhere on Earth, you will have a set of very specific issues and problems that are concerning you and the indigenous communities where you're based, can you just talk about, from your point of view, the problems that climate change is affecting at the moment in Kenya?

Titus

Thank you so much. I think as a community, as I mentioned earlier that we are pastoralist communities, our main livelihood is livestock. That's our main livelihood and we depend on rent land for pasture and water to keep our livestock alive. So one of the challenges that we are currently facing as a community is a persistent drought and rain that is not predictable, predictable because of climate change. Rent land currently is highly degraded, because of livestock concentration and wildlife concentration and lack of rain, maybe vegetation cover. The main huge challenge that we have, as a community is that access to Earth observation data that we can use, as my friend has been putting the indigenous communities require this information, to make a sound decision in terms of land management, and even wildlife and livestock management. If you don't get the data, then definitely it's very difficult for us to make a sound decision. You also find that initially, you find the communities rely on observing things like the moon or maybe the stars in trying to make maybe decisions, but you find that because of climate change this is no longer reliable. So if we can combine the traditional knowledge and the other observation data, then the Indigenous People will be able to make decisions. So basically, those are the main challenges that are coming out of climate change. The other thing is that most of the Indigenous people are not aware of climate change, some of us are not aware.

Dallas

When you say people aren't aware of it, and then you come along and say, "Okay, we've got this problem and we've got these different tools that can solve things" how responsive are communities to it? If it for example, it means changing the way they farm or changing their behaviour generally, are people happy to change for what might be the greater good, particularly if it's a technology they might not understand or know about?

Titus

I think, as I said, with this need for creating awareness, letting people understand that climate change is real. I'm saying this, because most of the pastoral communities, in northern part of Kenya, and even other Indigenous people, their education background is very low, most of them have not gone to school. So even

our interpretation of that data or even understanding of the climate change, that [unintelligible] is also selling. Personally, I'm saying that it we are facing that because I've gone to school, and I have the responsibility of creating awareness within my community, to make to make them understand that climate change is real. The impact is being seen now and it's not God's punishment to the to the community, it's climate change. Because that's what the community would say, "this is punishment from God, so there's no way we can reverse it". But again, if they're made to understand and let's say, availability of data and tools that are user friendly, or maybe relevant to the to the Indigenous people, then definitely the community will understand and be willing to change and even change their lifestyle, even change the way they normally move from one point to another point. Because even at the moment, you'll find that migration corridors for livestock, already closed by infrastructure, by the National Government, wildlife corridors are also closed. And because of that, you'll find that concentration of livestock and wildlife is having a negative impact to the land or maybe to the to forest or maybe the habitat are being destroyed because livestock and wildlife can no longer move from one point to another point.

Suzie

So tell me a little bit Titus, about how the Indigenous Peoples Alliance works. Is it bringing people together so you can have these conversations? Is it interpreting the data and sharing it with others? because presumably, you know, the data that we get back is quite difficult to interpret and requires some expertise. So does your Indigenous Peoples Alliance help with some of these factors?

Titus

Yes, our main role is first of all is creating connections between Indigenous Peoples, let's say, for example, Samburu [unintelligible] in the northern part of Kenya, will link up with another maybe indigenous community, let's say in Amazon, or even South Africa or other parts of the world. And you will find that the challenges these indigenous communities are facing, in a way they're similar. So they can learn a lot from one another. And also it becomes a [unintelligible] that demand for even data sovereignty, for the indigenous communities that I think that the alliance is doing, is also creating an opportunity where the indigenous communities will access global Earth observation data, and be able to interpret the data in a way that can be helpful to them in terms of capacity building. So we try to bring these communities together, we as an alliance, we still also have challenges because we are still a young alliance or a young organization, funding is still a challenge, even to bring us together, we thank GEO because they have been a huge support to the to the alliance, they even enabled us to create opportunities where we can network with other organizations that have sufficient data. So I think we have those two roles, bringing the indigenous people together, so that they can share experiences and learn from one another and again, creating an opportunity for them to network with organizations that access or maybe you can have free access to Earth observation data.

Suzie

Yeah, you said something interesting there, which is free access to Earth observation data. I think sort of one of the challenges of the community in general is that sometimes data isn't free or easy to access. Maybe we can bring Andrew back in here and ask you, Andrew a little bit about what Planet can do to support organizations like the one that Titus has co-founded?

Andrew

Well, first of all, the work that Titus and other indigenous leaders are doing is absolutely essential. It's worth talking about this in the right terms, before we talk about lots of ways in which access is being expanded, and these new partnerships being formed. All around the world, today, we'll just pick one example. First of all, all over the Earth, biodiversity is being lost. The UN in 2019, did a huge global analysis, a meta analysis of all of the rates of biodiversity loss around the world, this organization called IPBES and it found that the story is is bad and it's accelerating really bad, it's moving away from us, the only bright spot in terms of the places that of the slowing of the loss of the rate of loss of biodiversity, or the stopping of the loss of biodiversity, the only strategy that they found that worked, was having indigenous guardians engaged on the ground in in places around the world, where they acted as guardians of vital ecosystems. Now, so we have a common global heritage and in that common global heritage, Indigenous Peoples and their representatives are playing a linchpin role, an absolutely, not just a marginally beneficial role, a central role. And so we have a common collective interest, if we had no other interest in supporting Indigenous Peoples and their representatives, just around the things that are our common global heritage, the leadership of Indigenous Peoples must be strengthened.

And it's not just in biodiversity, it's in things like deforestation and the loss of forests that are common sinks of carbon that help us arrest, the rate of climate change. And all of this happens against a backdrop of unfortunately, a situation where if you look at the global map of primary contributors to climate change, and those communities that are the primary recipients of the impacts of climate change, they literally look inverted. That is to say the people in those societies that are contributing most to the problem, and those societies that are on the receiving ends of the problems are literally flipped. And it's unsurprising that those in the Global North are principally responsible and those in the Global South are principally on the receiving end and Indigenous Peoples whose livelihoods are often like Titus' whether they're, you know, pastoralists like in Titus' community or in many others.

These are communities that have long standing ways of living and ways of being their human rights and livelihoods, and ways of being alive on the Earth and bringing all the diversity to the human family, right, all of that is at risk. So we have every single reason to do this. So the challenge is not actually today, the thing that's important, the challenge isn't data, we're producing so much data, and that, the process by which we're producing the data is itself accelerating. So the availability and the breadth, and the coverage and the relevance of all the data we're producing has never been greater, and it's only going to become more so, the challenge is that you can't just sort of, say, "Here, we're going to dump a bunch of data into a virtual dump truck, and like pour it out on the floor in here". You have to translate it into

things that people can use to improve their adaptation and resilience to climate change and also to mitigate the effects of climate change.

Dallas

But presumably there's also a lot of cultural stuff, you have to take into consideration because you plunk a load of data on one person's table, that's going to mean something, you plunk the same data on someone else's table, and it's going to mean something else, because everyone has their unique problems and their unique challenges and their ways of doing it. And that that was my initial question about when you said, about the moral mirror. How do you kind of deal with all that? I mean, do you have a responsibility to tell people, to convince people how to do things better, or differently?

Andrew

The way we do this, ultimately, the most important word you use, there is the word together. So I want to just say a quick word, you know, when we have a number of issues that we have to overcome, if data is not the problem, but making the data actionable is the problem, what are the issues associated with making data actionable? Well, the first one is that a lot of the people who are making these technologies live in the Global North, they live in the precincts of Silicon Valley, and they live in, you know, certain places where they candidly, are technically very astute, but not terribly exposed to the way that people live around the world. You know, I can tell you that there are a few people I've met who are more sheltered than the typical Silicon Valley engineer, so you're making these big global tools. And if you want them to have effect in communities, in communities like Titus' or if we want to work with Amazonian communities, if we want to work with Pacific Island communities, we have to be at the same table and we have to be at the same table with the same standing.

Historically, it's worth noting that for hundreds and hundreds of years, people have shown up from the Global North saying "I have the solution" and there's a there's a long history of understandable distrust sometimes, that also has to be overcome. So the way we have to do this, is we have to learn to speak each other's languages, to understand each other's lives, to have stakes and trust in each other. We have to literally invest in each other. You know, when we do these projects, you have to break bread, before you can start talking about solutions, before you start talking about those things, all of that work, a lot of that work is the work. It's not about, you know, do we have the technology, it's about how do we build the conduits, and then there's a process of designing it, so that it's delivered in the right way. So for example, how do we overcome access issues for pastoralists? So now, some people say oh, there's no connectivity. That's not always true. There are ways of working and communicating even with people who do not principally live a connected digital life, we just have to design for them.

So I'm deeply optimistic and part of the reason that Titus' organizations and related organizations are so important is because they form this critical translational bridge between people who have the tools and technologies but don't have the context and people who are living in the context but don't have access to the tools. So we need lots more Titus' in the world.

Dallas

Does Titus and his communities know how important they are? They don't feel like oh, this is all being imposed on them? Titus, do you appreciate what Andrew is saying about, you know, being a being a linchpin, not just a kind of target for all of us, but you're actually a central linchpin?

Titus

Yeah, I agree with Andrew and I think what makes me happy is when he said that are bringing the Indigenous Peoples to the table. So that, maybe we discuss together and find the best way of making the data available, and even enabling the community to use that data to make sound decisions.

Suzie

Well, Titus, I have a question for you actually. Because I think that you are involved in a Hackathon, right? To use EO data and produce an app, can you tell us a bit about that project and what you came up with?

Titus

Yeah, I am coming to that. So I will say that it's very important that we have, as Indigenous people, we have people like Andrew, who are willing to sit down with Indigenous people. And I was in Bonn [unintelligible] on Living Planet Symposium, and we met with some lecturers from the UK and we were discussing or deciding on how best maybe the universities can frame research questions to fit into maybe the community or Indigenous peoples needs, other than maybe research questions or research being guided by availability of funds. And that's exactly what Andrew is alluding to, that we need to sit down and look at the problem and even develop the solutions together. As you say that I presented a challenge to Hackathon wanting to address the current situation that we are facing as Samburu people, because that is not accessible. People there is no network, maybe that they know, let's say, mobile signals or even network coverage and the people have not gone to school. So we wanted to develop an application, which is cultural relevant to the community and to the people by combining symbols, wildlife symbols or livestock symbols, in trying to locate where you are, and even to locate where markets are. And even the governments can use the same application to locate where communities are, especially when there is a disaster, I can give an example in 2020 when we had a locust infection into Samburu land, where the [unintelligible] was being cleared and the government was struggling to locate where the swamps are, or where they're located. So that also motivated us to start thinking on how we can support the local community to have a cultural relevant application that can be used to pass messages to the community. And I think these are the things that maybe when sitting at the table, we can be able to discuss on how best that can be that can be

supported and the application is called Namunyak, which is purely owned by the community. The challenge was discussed by the elders, and even the symbols were being drawn by a local artist, symbols of wildlife symbols of animals, which can be used with the application.

Andrew

I'd just say, Suzie, Titus is describing exactly the translation that these technologies need, you know, without that translation, the tools have very little relevance. If you can't actually get them to work in idioms that ordinary people in a community and I don't mean non-technical people, I mean in every community, every community, everywhere on Earth, you know, if we want to effectuate a transition to a more sustainable and a more resilient future it's going to require every community to take decisions a little bit differently and in order to do that, it can't be up to scientists prognosticating. You know, it's not up to people in Silicon Valley to do this kind of work, it's up to ordinary people who make decisions differently on Wednesday than they did on Tuesday. And so this is, you know, we don't give Nobel Prizes for translation, right? But we should, because it's the thing that actually makes the difference on the ground.

Dallas

Have you got an example, Andrew, of a community or any group of people who've done something extraordinary with the data that you've provided, something that you'd like to talk about, or something that's, you know, gone beyond what you thought was possible even?

Andrew

Sure. Well, first of all, the things that we have worked on so far, have been designed to help address big global contexts, but being able to provide the data that allows local communities to act on them. So you know, a good example of this is, I'll just mention one example that something we worked on called the Allen Coral Atlas, named for Paul Allen, one of the cofounders of Microsoft. As you may know, coral reefs are one of the most exquisitely vulnerable ecosystems subject to climate effects, that's because they're exquisitely sensitive to heat, and they're exquisitely sensitive to ocean acidity and both of those things are caused by climate change, and they can't really move, you don't see coral reefs picking themselves up and moving to a different place when climate effects come to the area. And yet we didn't have any good tools for mapping or understanding where all the world's reefs where, we actually didn't have a singular map, or monitoring system. So, we built one together with a team from Arizona State University, the University of Queensland, a number of NGOs, all funded by a group called Vulcan. And today, there are more than 30 new efforts underway to build new marine protected areas around the world, that take human effects off those reefs. The other really important thing is that a lot of those places, are places where Indigenous Peoples livelihoods and Indigenous Peoples guardianship of those communities is absolutely central. So you know, that mapping effort couldn't have been done without the assistance of numerous indigenous communities and now that it's done, it does something that's really, I

think, really powerful. And this is one of the things that I think is worth noting, Titus' examples when he was speaking a moment ago, were about how do we provide information to local communities to encourage the right behaviour. But it's also the case that there are huge information asymmetries and often Indigenous Peoples and I want to be very clear that I am speaking to those communities and not as an expert, and you know, we should never substitute a third person voice for first person voice about the what's happened in indigenous communities. But speaking from our own observation, indigenous communities are often subject to significant dislocation and disempowerment by formal government authorities. In places like Brazil, for instance, indigenous communities are, as we said, vital guardians of ecosystems, but when large moneyed interests in mining and logging and timber and other things come into their territories, they often don't have the ability to fight back. Sometimes the information is enough to be able to go to a judge and say, this activity is occurring, it's to stop. Sometimes it's enough to have the information and say we have the documentary evidence to stop you or to take to the press, or to just guide us to where you're actually engaged in this behaviour.

So we're seeing lots of things like that on the ground with these tools, where it's not just about bolstering biodiversity, or maintaining intact ecosystems, or even helping Indigenous Peoples adapt to a changing climate. It's also fighting back against real incursions into indigenous territories, and improving data equity and data sovereignty. To say, "Hey, you might be a multibillion dollar corporation and normally you'd have way more information than we do, but now we have the same information that you have" and that kind of clarity is profound.

And I think, in Brazil, for instance, I was just talking to one of the lawyers who, he managed to fight the case, to get Indigenous Peoples standing in the courts, the Indigenous Peoples didn't even have the right to sue, they had to be represented by the government, but the government was often the one giving permission to the organizations that were making incursions in the first place. So now they have the independent standing to sue and now the satellite imagery gives them the independent evidence to go after people who are engaged in negative behaviour. So as I say, this is importantly about climate and biodiversity, but it's also about human rights, and sovereignty and those things all go together.

Dallas

There are some amazing examples of that I've seen across the area, you know, fishing, people illegally fishing and modern slavery, and all these kinds of things. Suddenly, EO data is starting to come into to help us tackle, I know, Suzie, you've been involved in some of these projects.

Suzie

Yeah, I have and it sounds like actually one of the themes of our podcasts more broadly, is collaboration, and how can we work more collaboratively. And it sounds like what you're both describing actually, is a real collaboration between the Earth observation community and the local indigenous community and a real respect and mutual exchange of information and data and it sounds like, you know, driving this sort of collaboration forwards is what we need to do.

Dallas

I'm interested, Andrew said, right at the beginning, he was an optimist, which makes me happy and I just wonder, I mean, Planet do amazing things, as we've discussed in this podcast. I'd just like to give you both a kind of magic wand, it's a limited magic wand I'm afraid, you can't just solve climate change, it's not that powerful. But I'm interested in what you would like to, if you could wave, what the next sort of five years would be like from where you're sitting, what you'd like to see? What improvements would you like to see? What things would you like to end? It could be from a technical point of view or a more general point of view.

Titus

Yeah, I think I can go first. So, on a layman's perspective or an indigenous leader, possibly, what I want to see is, again, the red land, where my community livelihood relies on becoming more productive again, seeing vegetation cover coming back. And again, the community being able to access observation data easily and having tools that are user friendly, that can be used very well by the community without even being supported to do that. Again, we would like to see maybe within the next five years, a healthy community and healthy wildlife that are thriving together and a community that is aware of climate change and with the best solutions that can help them maybe cope or adapt to climate change.

Dallas

Are you optimistic that you'll get there and that things you've just talked about, things like ease of use, and actual real world solutions will happen? Is the direction of travel moving that way.

Titus

Definitely, we will be there. I'm sure that one day we'll be there, with like minded organizations, and even groups. As Andrew has put in rightfully, that people sitting together, discussing and maybe coming up with joint solutions, and the best approach with the communities. So definitely we will be there. We have so many organizations trying to build capacity of local communities in terms of climate change, and developing solutions together to address the impact, the negative impact of climate change. Governments are also currently in a way trying to listen, though not 100% but again, with facts from organizations, huge organizations like the UN, like GEO, like Planet, with the right information even the government will listen because we'll all be affected, even government officials are being affected, they're also feeling the impact of climate change.

Suzie

Perfect, great. Well, that does sound optimistic Titus, we look forward to updates over the next few years. And Andrew, what are your thoughts?

Andrew

Well, you know, maybe a philosophical point, as well as a practical one. So, you know, today, this conversation was about adaptation, and resilience and today, it's important maybe to zoom out for a moment, it's adaptation and resilience or what? Well, the 'or what' piece is mitigation, right? It's today the huge portion, the overwhelming portion of the discussion, and the resources and the attention and the focus is on trying to stop the root causes of climate change. And that is no doubt important, we will never get our way out of the situation, if we don't stop the underlying contributing factors to climate disruption. But it's also the case that many vulnerable people, increasingly vulnerable people are experiencing pain and disruption and loss and so if we don't have an increase in adaptation and resilience, that pain and that suffering is only going to increase that dislocation, and that disruption is only going to increase.

So I first of all, I think, you know, one hope that I would have is that we rebalance the shift between mitigation and adaptation, realizing that, that we can't solve the problem on the backs of poor and vulnerable people. That's one basic thing. I think the second part of that story is something that you heard Titus, say a minute ago, which is this underlying theme of restoration, you know, the narrative that we've had around these issues is one of loss. And success counts as slowing or stopping the loss, which is sort of the rights, if that's true, in as much as you're talking about, you know, like a patient that's in an emergency room, if you've had an artery cut, you had better stop the bleeding or worse things will happen.

But we have to be able to also move toward not just documenting the filmstrip of doom with Earth observation, and not just slowing the rates of pain and disruption, but restoration and regeneration that those things are possible, that the regreening that the restoration of ecosystems, that the restoration of livelihoods, and that human and flourishing in the entire web of life is possible again. So the places I think we're gonna see those successes are through the efforts of people like Titus, and organizations like the ones that he's building, when in the next five years, the thing that I'm so excited about is to see more of those positive use cases, those positive outcomes, those places where instead of paying attention to the 90% we've lost, we can pay attention to pay attention to the 10% that we've restored and in so doing begin to build the playbook for you know, the reef flourishing and regreening and the restoration of the Earth.

Dallas

I feel really optimistic. That was lovely. I feel really positive. Titus and Andrew, thank you so much for joining us for this conversation, it has been really, really interesting hearing you talk today. It's been actually terrific. And yeah, I'm coming away with lots of positive vibes. Okay, thank you very much to Andrew and Titus. That's it for this episode. Thanks for joining us. And of course, thank you too for our listeners for joining us as well.

Suzie

Don't forget, you can get in touch with Andy Bennett and Luca Budello at KTN if you'd like to collaborate on any of the themes that we've discussed today. There's also a publication that goes alongside this podcast series, it's called Meeting Net Zero and the Power of Place and you can find a link to it in the podcast description.

Dallas

We'll see you next time.

Suzie

Bye.