

**SM109 | 2.18.2023****Carbon Frontiers | Episode 1**

David Shukman, Journalist &amp; Former Science Editor, BBC

**We kick off our new Carbon Frontiers series with David Shukman, a distinguished journalist and the former science editor of the BBC, where he reported from the climate frontlines for over 20 years. SmarterMarkets™ host David Greely sits down with Shukman to catch up on his continuing experiences on the frontlines of climate, government policy, corporate action, and science.**

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**David Shukman** (00s):

When you say climate change means more extreme weather, because we're pumping more CO2 into the atmosphere, we're overheating it, it becomes more energetic. You're gonna get heavier rain, you're gonna get more heat waves, you're gonna get more violence in the weather systems. Suddenly it isn't just, oh, that's a shame. It's oh actually, deliveries of key commodities and components that my business depends on are at risk. And I think that starts to really change the equation. It moves it from being, oh, a problem with polar bears to a problem with a bottom line and that makes people wake up.

**Announcer** (36s):

Welcome to SmarterMarkets, a weekly podcast featuring the icons and entrepreneurs of technology, commodities, and finance ranting on the inadequacies of our systems and riffing on ideas for how to solve them. Together we examine the questions are we facing a crisis of information or a crisis of trust and will building Smarter Markets be the antidote?

**David Greely** (01m 02s):

Welcome to our new series, Carbon Frontiers on SmarterMarkets. I'm Dave Greely, Chief Economist at Abaxx Technologies. Our guest today is David Shukman, a distinguished journalist and the Former Science Editor of the BBC, where he reported from the climate front lines for over 20 years. We'll be catching up on his continuing experiences on the front lines of climate, the government policy, the corporate action, and the science. Hello David. Welcome back to SmarterMarkets.

**David Shukman** (01m 30s):

Great to be back. It's a great pleasure.

**David Greely** (01m 32s):

Oh, really lucky to have you here and thank you for helping us kick off our new series that we're calling Carbon Frontiers and speaking of Frontiers, I know you've just returned from a trip to the Arctic. So first off, what took you there and what did you experience?

**David Shukman** (01m 48s):

Well, I've knocked the snow off my boots, which is great. I've always been drawn to the Arctic because it's one of the fastest warming regions on the planets, and it's an extraordinary part of the world. It's one of the planet's, two great air conditioning systems. There's Antarctica, and then at the roof of the world, the Arctic and sadly it's overheating with consequences for all of our weather systems and sea level rise and it's also a region that's riven with border disputes, frontier disputes, if you like, which really matters because as the ice retreats, there's now a scramble for the oil, the gas, the fisheries, the seabed minerals and things were already edgy with Russia and now they're very edgy and there's a risk of this region becoming a geopolitical flashpoint. And so anyway, up at the far north of Norway in the beautiful city of Krom zone, there was a conference bringing together scientists and policy makers and ministers and indigenous people, and everybody was trying to find a way forward. And it was a great to be back. It was my 16th trip to the Arctic over the last 20 years, years. And I've learned to say no to the whale meat, but yes to the reindeer

**David Greely** (03m 03s):

Well, 16 years. Wow. And I know it's, it's only been a year, I think, think exactly a year since the last time you were our guest on Smarter Markets. And when you were here at last, you had just left the BBC after a distinguished career, but sounds like you still remain on the front lines of climate and government policy and corporate action and the science like you've always been. So I'm curious, what have you been doing the past year?

**David Shukman** (03m 29s):

You know, that was the question my mother asked me when I left the BBC. What are you gonna do? Well look, I mean, on one level it, it's personal. Like for most of us experiencing life on a planet that's one degree hotter, you know, I mean the UK had record temperatures last summer and that was quite something to live through and see the effects of that. I mean, the trains ground were halt and all the rest of it but on a professional level, I found a number of business leaders, organizations and others hungry for information, hungry for understanding about climate change and what it means for them as individuals and for their organizations and I always knew there would be invitations to give keynotes at conferences or to moderate panels at events and so forth and I've been doing that and I really enjoy engaging with different sectors.

**David Shukman** (04m 20s):

But the thing I hadn't expected was a set of invitations that have come kind of spasmodically. It hasn't been a torrent, but there'd been enough of them to be really interesting to engage with the CEO level of major corporations where people get in touch and say that the top team of a big company is really interested in this, but they've got some questions. Can you come in and just help them understand what it's all about? Or the CEO is fresh from Davos and full of this climate talk, but a few members of the top team aren't quite so sure it's for them. Can you come in and be a bit of an advocate ad so I come in and talk about climate science, I talk about the risks of extreme weather to global supply chains and costs and I talk about the things which I think will resonate with them and I've gotta say without being immodest, I've once or twice had the satisfaction of just seeing the penny drop with someone who has been pushing me in a meeting to say, well, I don't really get this. I don't see how it's to do with us. And then you explain and you just see it in their eyes and you think, okay, I'm being useful in that sense. So that's been a big part of my life for the last year.

**David Greely** (05m 32s):

It sounds wonderful and I can't wait to dig into some of the details on that, but you know, as you're a journalist, I have to ask you, if you were to file a report on what you've learned and seen over the past year, what would the headline be? What would the lead be?

**David Shukman** (05m 46s):

Well, if it's for a national family newspaper, I'll be careful about the language, but let's say we're heading for a massive car crash and many people still haven't realized that, but we do still have time to grab the brake and what's reassuring is that more and more people either are putting their hands on the brake and giving it a good pull or they're reaching for it, or at least they're asking where is the brake pull all those together and I think there's a little hint of optimism but yeah, look, I think we we're heading for trouble, but we, we now have the means we know what they are to help ourselves get out of it.

**David Greely** (06m 25s):

And speaking of reaching for the break with climate action and carbon markets, you've always had kind of two large groups being looked to grab the break, the public and private sector government policy or corporate action and I'm curious, what developments have you been following? Maybe we start with the government policy side. Are you seeing good progress being made there or what are some of the obstacles?

**David Shukman** (06m 48s):

Well, I think something has happened in the last year, two years, which would've been unimaginable five years ago, six years ago, which is most of the globe, nearly every government now has some kind of target for cutting carbon emissions. Now some of those are more serious than others, some are more sincere than others, some are utterly back of an envelope and unrealistic others are actually being delivered right now. But I think there's been a sea change in attitudes at the government level where for a long time, this whole issue of carbon reduction for the sake of tackling climate change, avoiding dangerous temperatures, was something where governments found it very, very easy. Like at the Earth Summit in Rio in 1992, just put your name, put a signature down, get a picture, and then go off home. Now the rubbers hitting the road and the Paris Agreement, all of the governments that have signed up to that are now committed to a regular process of scrutiny of their carbon plans does not mean that they all deliver them. Doesn't mean that they all submit refreshed plans as often as they should, but it does mean there's now a public process by which it's potentially more embarrassing for a government to promise one thing and not even try to deliver. So I think that's a really significant change in the policies here.

**David Greely** (08m 14s):

And I'm curious when you see that, is that around the COP process and the, you know, we just had COP 27, we'll have another one coming up because that seems to be where a lot of the government policy gets attention, but not sure if that's where the progress is actually being made?

**David Shukman** (08m 30s):

I think you're absolutely right. I mean, COP 27 was my 11<sup>th</sup> COP and it was extraordinary to see the power of a relatively small minority of governments who just wanted to slow everything down. You had a number of progressives that really wanted to, to see progress and you had the developing countries, the poorest on earth, desperate for progress on this, but then it, it wasn't that hard for the big Petro states just to quietly lobby and intervene and just slow everything down and so the result was very, very much weaker than anyone had expected. And I think looking ahead to COP 28 in Dubai, I, no, it's actually, it's in Dubai, but it's being hosted by Abu Dhabi, a big oil producer. I mean, they're in gonna be in no rush for the end of the oil era, despite what the science says. So I wouldn't look to COP 28 for rapid progress either.

**David Shukman** (09m 28s):

And I think where this leaves us is in a political sense, coalitions are willing governments, and I think you're seeing that more and more either government's just on their own making a decision that this is a pathway they want to follow for whatever reason or groups of countries seeking to act together and for me, the COP process is valuable as a kind of organizing regular set of events that brings the world together. The only forum the world has to discuss this collectively, but I don't see it delivering. But if it serves the purpose of helping catalyze these coalitions of the willing, well it's definitely worth doing.

**David Greely** (10m 06s):

Yeah. And it's like anything, it's hard to get progress made when everyone has to agree in my household. I have a hard time getting everybody to agree on what movie they wanna watch on a given night.

**David Shukman** (10m 15s):

That's impossible.

**David Greely** (10m 17s):

And so I'm curious like this notion of these coalitions of the willing, what are you seeing happening at that, don't wanna say lower level, but that level below of, you know, countries coming together. What important things have you seen happening there that deserve to get more attention?

**David Shukman** (10m 34s):

I think there's a really interesting plan which has potentially very positive and important results, which is something called Jet P and I'm not gonna remember what that stands for but essentially it is a public private partnership to assist big emerging economies, industrializing countries, to move away from the classic fossil fuel pathway into heavy investments in renewables, which will reduce emissions and help them with their development over the next 30, 40 years. So the first example was in South Africa, a big coal user and the COP 26, the Climate summit in Glasgow. There was the launching of this process where a number of banks and small number of countries came together to say, we will help you South Africa, get the money, get the tech, get the wherewithal, the know-how to help you make that transition and since then we're seeing a similar process unfold with Indonesia and with Vietnam and there are others in the pipeline.

**David Shukman** (11m 40s):

Now, that to me is a wonderfully tangible, pragmatic, hands-on example where there's no lofty rhetoric, oh we must all strive together for a happier plan. None of that, that it's hard-nosed. It's how do you mobilize the billions needed to make this happen when a country like Indonesia says, look, we're hungry for power. How are we gonna get it. We've got a booming manufacturing industry, we've got a growing population, you tell us you help us do it and I think we haven't seen that come to fruition. There're bound to be bumps in the roads, perhaps even quite big bumps. It may not have happened, it may happen for one or two countries, but not for others but it's the kind of example which I think is inspirational and shows that there is a possible pathway that not every country has to do what the, the West did, its industrial path, which was very fossil fuel heavy and damaging to the planet that there's another way to do things. So let's really keep our fingers crossed that that public-private partnership can deliver.

**David Greely** (12m 46s):

Definitely keep our fingers crossed because when you look at these, you know, often it seems like the conversations around developing countries are for them to just use less, you know, to forego the development in order to curtail the fossil fuels and so it's great to see that, at least in some places, it's being embraced that they have a right to develop and we need them to develop in a low carbon way and putting the dollars behind that that are necessary and I wanna follow up with what's happening in the private sector as well because I'm curious, you know, you mentioned in the beginning that you talked to a number of CEOs and I'm curious your assessment of the mindset and how is the approach to climate and carbon markets by corporations developing?

**David Shukman** (13m 30s):

Well, I mean, let's be honest, there are some that are making fantastic returns from fossil fuels because of Putin's aggression against Ukraine and they're gonna continue to do that for the next few years. So we've seen BP and Shell, for example, scale back their renewable plans because there's so much money to be made. So let's be kind of open and, and honest and realistic about that being a facet of all of this. But at the same time, and it's just never gonna be a straightforward answer I'm afraid but at the same time, from my contacts and work with different sectors, including sectors which have always been labeled hard to abate, in other words, takes shipping, which for years said, well, this carbon thing too hard for us, you know, it takes 30 years to develop a fleet and there's no tech around whatever. Now what we're seeing there, and I moderated and a decarbonization event for the shipping industry last summer, 100 CEOs.

**David Shukman** (14m 25s):

And of course you had plenty who didn't really wanna know what this is all about, but you also had the sort of Tesla lookalikes in another corner. You had the companies that thought, hang on, there's gonna be a market here for greener shipping and in fact, a year or so before you had some retail giants like Wal-Mart and Amazon saying, we need the products that we're selling to be delivered to us from the likes of China in a greener way because their own, they wanna reduce their own carbon emissions and if on their books there's the carbon cost of the shipping, then they're not gonna deliver their targets. So they threatened to start their own green shipping line and that really put the cat among the pigeons of the shipping industry and so what you're seeing I think is, and I mentioned the example of shipman because I think, you know, there is, it's plausible to see what Tesla did in the car industry, which was suddenly show that an attractive product that works backed up by a really effective charging infrastructure can completely upset a global industry, which for years, for decades had always dismissed electric vehicles as nonsensical and never gonna work.

**David Shukman** (15m 33s):

You're seeing the same to an extent in aviation, although that's much harder. You're seeing it in shipping now a few companies investing in different tech solutions that'll reduce emissions sometimes dramatically. You are also seeing particular global ports and governments that that run those facilities saying, we're gonna be pioneers in providing greener fuels and so you can suddenly see how you will get green pioneers in an industry that previously was never taken seriously on this. So I think that's the pattern we're seeing definitely conservative at one end, and definitely people seeing market opportunities in the years ahead.

**David Greely** (16m 16s):

Yeah, that's why we find it so important to develop these carbon markets and have a price signal out there, because that's ultimately what most people by and large will wanna respond to and that creates opportunities as well as curtailing use and I love that idea of the creative destruction that the innovators can bring when they sense opportunities to do things in a better way going forward and I've seen you've done some posts recently talking about the, the parallels between movements to electric vehicles today and movements to the internal combustion engine back a hundred plus years ago. I'm curious what interesting parallels you see there?

**David Shukman** (16m 53s):

Well my wife and I bought an electric car. There were tax incentives in the UK and so we, we did that and our initial experience was, was terrible. I mean, it was, we were baffled by the, the apps and the charging systems and how it all worked and we've gradually got the hang of it now and it prompted me to explore what happened when thousands of years of human civilization that relied on transport involving a horse and some kind of wheeled wagon was overturned in a matter of years or few short decades to the internal combustion engine. I mean, that was a very dramatic shift and, and what happened, and there's no doubt that the same kind of issues that you hear talked about now with electric vehicles, for example, range anxiety. I mean, range anxiety is not new. If you were one of the first buyers of a petrol driven car and you wanted to drive a long way, you really had no idea as you set off whether you could buy petrol at the various stops you would make on your journey, let's say from London to Edinburgh, you would hope that some of the old

inns on the main roads, which for centuries had had stables with horses, so you could change horses on your way that some of the more enterprising ones would've invested in, in fuel.

**David Shukman** (18m 21s):

But stop gaps had to be developed you know, you could you could send tanks of fuel by train ahead on your way so you could be sure of your own supplies. A few car owners, well car owners were allowed in Britain at least to store 40 gallons of petrol at home. I mean, I, everybody smoked in those days, so I can't imagine, I mean the, the fire risk must have been huge, but nevertheless, you could have a tank with 40 gallons and people advertised that they had petrol so that fellow motorists could stop by. But I mean, it was a, it was a hassle. There were, there were very weak standards in petrol. There was a whole hassle about the connector, the nozzle and the thing, and would it work exactly what we're seeing now get sorted with electric cars, but much more rapidly. And I think we've seen how really just in the last five years, a kind of normalizing of EVs and that that will continue again just in a few years, it'll suddenly become way easier, more straightforward, more familiar. It'll no longer be a weird site to see an electric car come down the road.

**David Greely** (19m 33s):

Right, it's so great to be able to find some historical familiarity to what these transitions look like because there's always reasons not to do something new and those get pointed out and I think it slows down the pioneers, as you said and I kind of was curious because recently there have been a number of stories, many of them coming out of the Guardian I believe, kind of taking to task some of the carbon registries and some of the, the carbon projects that have been done and I think that's always, you know, a role for critiquing. But there's also an aspect of are you holding things to too high a standard? And I'm curious, just with your background, how do you think about that as a journalist?

**David Shukman** (20m 16s):

Well, as a journalist, I'm afraid that's always gonna be a potential story because carbon offsetting is a principle is critiqued by some as a kind of easy get out from a much harder task of emissions reductions absolutely. It became a story many years ago because there were some cowboy schemes, there were phantom forests and all that kind of stuff and the carbon cowboy story kind of got into the media. So the industry, that industry is always gonna have to fight that. I mean, I think where we are now is that the levels of scrutiny have become so much more intense, which I think is a good thing in all areas of this debate. I mean, whether it's claims to be green, which are exposed as green wash or claims to be offsetting huge amounts of carbon in a forest that for whatever reason that doesn't stack up.

**David Shukman** (21m 09s):

I mean I think it's right that the spotlight of truth is just beamed right down because we're never gonna progress if we don't expose dishonesty but I think the risk is an assumption is made while that's all nonsense, everybody's at it for some quick buck. And I think a lack of discrimination about the different kinds of schemes is also a thing. I mean, for example, many of the people I've been talking to in recent days following a guardian investigation into a particular set of schemes kind of triggered a debate about if you are looking to sell carbon credits to keep an existing forest standing, that only works as a principle if you assume that without intervention that forest will get chopped down. Now that immediately creates a whole lot of questions. I mean, who's to say it was gonna get chopped down, was the terrain ever likely to make it possible to be a child?

**David Shukman** (22m 07s):

I mean, you know, all kinds of factors. Arguably it's easier to say, here's a big stretch of degraded land and no one happened to be living here and we're gonna plant new trees and manage them for a period of decades. That's a different proposition and arguably easier to keep track of. So I think we may start to see a discrimination in that market, but the more people create net zero targets for themselves, companies, big and small governments and so forth, individuals wanting to offset their own emissions, the market for these products is gonna boom, which makes it often say our first point, all the more important that that it's got right. That it's reliable and that it's honest.

**David Greely** (22m 53s):

And so I'm curious, when you look out at the world right now, what are some of the stories that you think are important but might be getting overlooked?

**David Shukman** (23m 02s):

I think there's something in the media, and I don't want to use the phrase mainstream media because it's used pejoratively, but in the news media, which I've been part of for 40 years, where we're often I say we collectively, were often slow to pick up on new

developments. I mean, we're very good at news like what's happened now in the last hour kind of thing. But actually we don't often spot the landscape changing. So for example, in the UK there was a movement, a resistance movement against wind farms onshore 15 years ago, 10 years ago, most recently the opinion polls all show people being very supportive of wind turbines because it's homegrown power, it's clean, it means we don't have to buy gas from Putin or anyone else. But if you read the newspapers here, you wouldn't know that. You would get the impression that there's still some rebellion against winter controversial wind turbines.

**David Shukman** (24m 02s):

And then you still sometimes see the sort of tagline unaffordable in relation to renewable energy, you know, that sort of solar panels are for the rich. All right and I think again, the media has missed the staggering reduction in cost of many renewable systems. I mean, I've been helping the city of Hal major industrial city in northeast England with its net zero plans and at a launch event a little under a year ago, I was chatting to the guy running the big ports on the river. Humber. It's a major estuary, it's a big industrial center, it's Britain's biggest carbon emitting region and this guy described how they've just fitted solar panels to the, the roofs, the flat roofs of this enormous port facilities. It's the UK's largest rooftop solar installation and asked him, how many years do you think it'll be to get your money back because it costs 6 to 7 million pounds to install these panels.

**David Shukman** (25m 05s):

So many of them and so all got up on the roof and I thought he would say, well it might be a seven year period or an eight year period to get my money back. He said two years. And I don't think the media have woken up to what a profound change we're seeing now where businesses like that are making decisions that may or may not be motivated by the climate crisis, but they, they're just good business decisions and I think we're seeing that all over the place and I think the energy crisis here has really fostered that sentiment. You know, it makes sense to insulate and to move to greater energy efficiency and again, I think for a long time insulation was but possibly the most boring topic in the news, right. I mean, nobody wanted to talk about it. I did a story once about it and my editor said, never show me video of guys unrolling insulation in someone's attic ever again. It's too dull, right, well now insulation's pretty sexy, right? I mean Putin has done that. It's good to save money.. Alright, so I think there are, that's one major trend. The tech, the way the tech has reduced in price and what it means for who's gonna install it and where. And I think that's something that's, that's overlooked.

**David Greely** (26m 25s):

Sure president Putin is not gonna be happy with his tagline of making insulation sexy.

**David Shukman** (26m 31s):

There are other things we could say about him obviously.

**David Greely** (26m 34s):

Right, right. But no, it's so important and I wanted to ask you about that because I mean, you've followed the science of climate change and the technology for decarbonization for many, many years and so, you know, it seems like there's the high-tech answers, the low-tech answers like insulation. What other good news are you seeing on that front, is there a reason for optimism. We often like to hope that our technology's gonna come to the rescue.

**David Shukman** (27m 00s):

We all want a silver bullet, don't we? We all want MIT Cambridge to come up with it. Oh look, we've got this thing, you know, all you've gotta do is put it in your T and the whole problem will go away. I think there'll be silver bullets on many fronts and what I'm seeing is now that the whole issue has become higher profile now that the vast majority of governments have set these various targets, as I say more or less meaningfully now that more and more business people are seeing opportunities. I think we're seeing a race now, a tech race which is productive. I mean we're seeing phenomenal advances in the designs and size of wind turbines. I mean, when I first filmed wind turbines, they were delivering, you know, rated to about 1.52 megawatts. Now they're installing 10 or 12 megawatt turbines out in the North Sea.

**David Shukman** (27m 59s):

The Chinese unveiled a plan recently for a 50 megawatt turbine. I mean I think there's unimaginable in size now you're seeing the same with solar, you know, not just a layer of silicone, but layers plural of different substances to capture different wavelengths of light. Something that's very exciting because solar has sometimes got a bad press because if it goes on farmland or you use losing the, the capability of that land to, for agriculture, well there's some great examples in the states I've seen in France of where you mount the panels quite high and then grazing animals can carry on below them and enjoy the shade. There are certain crops in hot climates that

benefit from the shade. I mean this kind of thinking, it's a mix of brilliant technology coming out of the labs like with different types of solar panel through to kind of more like, I would call it common sense, perhaps low tech stick the panels up, right, I mean, you know, I think that kind of thinking is exciting because I think we're seeing a flourishing now. It's exactly what we've always needed. Flourishing of ideas, some of which will fly, some won't, some may be brilliant and not get backed, but I think we, that's what gives me a bit of hope when you get the real brains, if they can find the money, if they can get to the markets, you know, the, then suddenly a lot of stuff which not long ago felt implausible. Now looks plausible.

**David Greely** (29m 31s):

And speaking of finding the money, I'm curious with the Russia's invasion of Ukraine and the spike in energy prices that came along with it, are you seeing more of an alignment of the desire for energy security and environmentally responsible energy, is the push for energy security pushing people into things that are also good for the environment?

**David Shukman** (29m 55s):

I think for the first time, certainly on this side of the Atlantic, we're seeing that alignment an intersection between the climate agenda and the other agendas of affordability and security. For a long time here people talk about a trilemma that, you know, you, you wanted to try to find things that would deliver all three cheap power that wasn't victim to outside interference or problems that was also carbon friendly and often those were in competition. Whereas now if you look at a solar farm, an onshore offshore wind farm, they provide you with security because they're homegrown because the gas prices and oil prices so high, these renewable solutions can provide cheaper power and of course they're also delivering, well they're avoiding carbon emissions that would otherwise have happened if we'd had to burn more fossil fuel. So I think that's something which is starting to play in politically. So in the British political context, you're starting to see in conservative circles who traditionally have contained many people who might be opposed to action on climate change, actually the argument's starting to shift a bit. You are seeing it around the world in, in other contexts as well. It suddenly makes sense to do these things and I think that's, well I hate to say it's a good thing because of the cause of it in Ukraine, but hey, let's look for a silver lining.

**David Greely** (31m 24s):

And I wanted to come back early on in the conversation, you were talking about your work with, you know, CEOs and boards and companies and I think you used the expression you know, those moments when the penny drops. I think you said that on the side of the Atlantic, we might say when the light bulb turned on, but I was curious, are there certain moments, are there certain misunderstandings or certain points of understanding that make that light bulb click on?

**David Shukman** (31m 50s):

Well, so I think one I mentioned global supply chain risks and something which I've noticed, I mean certainly impressed me and has made a mark in different events that I've, spoken at is if you look back to 2011 to what happened in Bangkok, and you might think, where is this story going there was torrential rain, massive flooding and the industrial area just outside Bangkok was under a meter or so of water. That's significant because the Japanese car makers get many of their electrical components made by Thai companies in Bangkok and for a month, six weeks at least, those companies were out of action and so the Japanese suddenly thought, whoa, hang on, extreme weather is having an effect on our supply chains. The BBC was due to get a whole new batch of cameras. That didn't happen because the lenses were being manufactured in Bangkok.

**David Shukman** (32m 56s):

Fast forward to April of last year, and again, when I start this story, you'll think, where's David going with this but the Port of Durban in South Africa happens to be one of the key transit routes for cobalt that's mined in the Democratic Republic of Congo and taken by Railway Road from DRC down to Durban in South Africa where it's shipped to China for processing. DRC is the world's largest producer of cobalt. China is the world's largest processor of cobalt, extreme weather with flooding basically closed the port of Durban for a few weeks in April last year. So suddenly this key supply of a crucial commodity vital in so many ways was disrupted and people go, oh, I didn't get that and there was a price spike and so forth and that's what happens and when you say climate change means more extreme weather because we're pumping more CO2 into the atmosphere, we're overheating it, it becomes more energetic. You're gonna get heavier rain, you're gonna get more heat waves, you're gonna get more violence in the weather systems. Suddenly it isn't just, oh, that's a shame. It's oh actually deliveries of key commodities and components that my business depends on are at risk and I think that starts to really change the equation. It moves it from being, oh, a problem with polar bears to a problem with a bottom line and that makes people wake up.

**David Greely** (34m 30s):

Sure does. Well I wanted to thank you so much, David for helping us, you know, return to the carbon frontiers and in the rest of the series we're gonna continue to discuss the advances and the obstacles at the front lines of climate and carbon. But before you go, I was curious, you know, what stories and developments are you gonna be following most closely, you think over the next year?

**David Shukman** (34m 52s):

Well, I think one will be keeping a, a really close watch on what happens in the Pacific because there are signs that there may be an El Nino emerging in the latter part of the year. We've had La Nina conditions over the last two, three years, which bring problems for various parts of the world. But then El Nino can really act as a kind of bit of rocket fuel in the global climate system. So I think we need to be very watchful of what happens there and what the consequences are for extremes of weather because let's, let's face it, you know, record nighttime temperatures, record heat waves, conditions where people can't work out of doors cause it's too hot. Laborers, construction workers, farmers, I mean, I think I'm afraid we're gonna see more evidence of a hostile climate that we've, that we've created. So I'm gonna be watching that very closely.

**David Shukman** (35m 45s):

The other thing, and we haven't really talked about it much, I've mentioned it, is greenwashing along with a very welcome surge of corporate engagement with this agenda is an awful lot of smoke and mirrors or what I call smogen mirrors, where people are saying, oh, look over here we're planting a forest, or Look over here, we've scrapped plastic cups in the office. Oh, look at this. We're cutting carbon by some percentage, right. Without a baseline, without any scrutiny and I think we were in an era where we need to be very, very mindful of the fact that if lots of organizations claim one thing and do less, we're gonna head for dangerously high temperatures. The only way to avoid that is if every country, every sector, every company, as far as possible, every individual does what they can to reduce emissions and, and not to lie about their, not to lie about it and boast about their green credentials, which don't exist. So I think that's a, a key theme for me is scrutiny, holding people to account and trying to make sure that there are honest conversations. I think that's been missing. There's been a lot of claim and bluster and I think it's really important that that gets cut through and so that you can highlight, and this is the positive part, highlight the good stuff, the great wave of good stuff that's going on, often unnoticed, but very, very important. And I think if that can get highlighted, then the message gets spread.

**David Greely** (37m 26s):

Thanks again David Shukman, distinguished journalist and the Former Science Editor of the BBC. We hope you enjoyed the episode. Join us next week with our guest, Peter Fusaro, Founder of the Wall Street Green Summit, now in its 22<sup>nd</sup> year bringing together the leading practitioners in sustainability with the goal of building a more sustainable finance system for responsible investing and the changing role of business. We hope you'll join us.

**Announcer** (37m 52s):

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