Transcript of ‘The Murky Waters of West African Fishing’

Season 3, Episode 11, Transforming Tomorrow

[Theme music]

Paul: Hello and welcome to Transforming Tomorrow from the Pentland Centre for Sustainability in Business. I'm Paul Turner.

Jan: And I'm Professor Jan Bebbington. Fish farming, which leads to a demand in fishmeal, is affecting the wealth and health of communities in West Africa, and it all centres around one particular type of fish.

[Theme music]

Paul: What's your favourite fish, Jan?

Jan: Ah, haddock, I think. Yeah, because, uh, fish and chips you see.

Paul: Uh, it's interesting that you went there 'cause I could have meant any kind of fish, not necessarily fish to eat. It could have been fish to look at or see in the sea, but no, you went straight to fish and chips.

Jan: [laughs] I'm afraid it was fish and I thought about eating. Yes, that's true.

Paul: Why, so why the haddock? What's so much better about the haddock than the cod?

Jan: I find cod sometimes the, the flavour's a little bit sort of too delicate for me. And the haddock flakes really nicely. Um, and yeah, so I prefer it, and it's cheaper as well. So in that respect, it's probably better.

Paul: I bet you a good amount of money there's lots of people who wouldn't tell the difference between eating a haddock and a cod if we were to put one in front of them now…

Jan: …yeah…

Paul: …I'm wondering if I could do that blind taste test with you. Next time we do a podcast, I'm gonna bring two battered fish in and ask you to identify which is a haddock…

Jan: …wow. That, that would be a test. That'd be a test and a half, because oftentimes when, when, uh, food producers are presenting food, it's, it's white fish, so it's not what it is. Whereas other times, you know, restaurants or whatever, they say, oh look, here's haddock. Ooh, here's cod. So it's, yeah, it matters I think in some ways.

Paul: And how often do you eat seafood, would you estimate in a week?

Jan: Uh, probably once a week. Um, but maybe…

Paul: …don't worry, I'm not your doctor. [Jan laughs] I'm not checking up on, you know, whether you're having the right kind of diet…

Jan: …yeah…

Paul: …I'm not going to criticise you for your lack of omega-3 fatty acids and things….

Jan: I'm trying to eat more fish because of the, the omega-3. But also there's a sense in which, depending on how the fish is raised, that it might be lower carbon than the equivalent meat source of protein.

But it's really complicated. I get really confused about what I'm supposed to be doing here.

Paul: And we've talked about, in the past, the shrimp and in certain parts of the world, and what happens to them and how they're farmed and that kind of thing as well.

Jan: Yeah, so I much, I much prefer fresh fish that I know has come from somewhere close by. But that's a, a luxury to be able to do that. Although for, you know, for some people it's essential that fresh fish from nearby is really important for, for diets.

Paul: Yes. Because whilst here in the UK it's recommended as part of a wider diet.

In some parts of the world, the marine ecosystems and the seafood are just the, *the* key part of what people are eating,

Jan: It is indeed a really essential food source for all sorts of things, which we'll find out about on this podcast.

Paul: Yes, because we're gonna be discussing all those kind of issues, things such as marine ecosystems, the links between seafood, human health, looking at some of those people for whom fish is an essential food source.

And to do that, we're joined by Professor Christina Hicks from Lancaster Environment Centre. She's a good friend of the Pentland Centre and she's part of a central part of the People and the Oceans Knowledge and Action Hub that we have. And she's also consistently among Clarivate's, highly rated, highly cited, rather, researchers, putting her in the top 2% of cited researchers in the world. She's been on that list many, many times… [sighs]

Jan: …well, Paul, if you'd read of…

Paul: …puts the rest of us to shame…

Jan: [laughing] …you're looking at me. Um, if you read…

Paul: … well, I'm not a researcher. I can't be put to shame for not being on that list.

Jan: [laughing] I thought as much, but, so if you read your papers, you'll realise why. I mean - fantastic. And the areas they cover are fantastic. So we're in for a treat, dear listeners.

Paul: Welcome, Christina.

Christina: Thank you. Thank you very much for that generous introduction.

Jan: You look horrified by the generous introduction, I have to say. [laughs]

Paul: But being labelled as one of the world's most influential academics, you know, at the start of a podcast, it's a high standard to live up to.

Jan: I have no doubts whatsoever, it's gonna be fine.

Paul: Christina can you start just by telling us a little bit about yourself and your background, and what it actually means to be an environmental social scientist.

Christina: I, I always find that question really hard, 'cause both my background, personal, academic, and disciplinary background is quite, quite complex.

Um, I'm, I'm originally from Kenya. And I guess maybe coming from Kenya and growing up in East Africa has shaped a lot of the values that underpin my research. But it's not been a very direct route.

So my undergraduate degree was in environmental chemistry. Um, I ended up working in a lab analysing soil and air samples, and completely disconnected from the environments that they came from. And so I wanted to understand the broader world.

Um, I went back to Kenya and I worked as a fishery scientist there. And then I came back to the UK and did a Master's, um, in, it was called Tropical Coastal Management, but really it focused on environmental governance and environmental economics.

Um, and then my PhD was in Australia and that was in human geography. So it's quite a, quite a varied pathway to where I am.

Paul: Yeah. And so how then do you end up as an environmental social scientist? And is that in fact, as we've discussed before we started this podcast, a label you even like?

Christina: Yeah, so I don't like labels full stop, I think, um, partly 'cause I never find myself sitting very comfortably within boxes. I guess environmental, environmental social science, essentially, it, it means I study systems at the intersection of people and ecosystems, and I draw on a variety of theory and methods from a range of different social science disciplines, and I apply it to environmental and ecological understanding.

Paul: Can you give us an example of some of those types of systems, then, that you have looked at?

Christina: Um, so a lot of my work's focused on fisheries. Based on my early work in Kenya was, came from looking at the underlying ecology and dynamics after fish was landed. Um, so that's, a lot of my time is focused really on understanding fish and fisheries.

But that's sort of broadened into the broader food system. So, so I, a lot of my time I look at examining and understanding the food system, but from, but I arrived at it through the lens of fish and I, I still spend a lot of time thinking about fisheries.

Jan: And you could tell from the, the dietary quizzing I was getting at the start of this podcast [Paul laughs] that, that we associate fish with something in human diets.

So, so what does fish bring to human diets?

Christina: Yeah. Um, so I think you mentioned omega-3s. And I think most of what people think about when they think about fish is the omega-3 benefits and omega-3s are, they have protective properties.

So a lot of our diets, particularly in more modernised Western cultures, are fairly heavily dominated by ultra processed foods. So there was a recent series that was launched I think yesterday in The Lancet, which is really interesting, will tell you all about the, the problems with that.

But omega-3s protect us from some of the non-communicable diseases that our modern dietary practices kind of lead us, so coronary heart disease and things like that.

But elsewhere in the world where diets have not yet transitioned across to more un unhealthy habits, omega-3s play a critical role in that they have these things called micronutrients, and they're things that our bodies need in tiny quantities, but they're essential to physical and mental development.

I think what I like about micronutrients is they're *micro*nutrients, so we only need really small amounts of them…

Jan: …yeah…

Christina: …so it can also, you know, help us shift our logic away from needing more and more food to just, actually, how much is it that we need?

Jan: And so this access to micronutrients, but also omega-3 and protein, 'cause fish is a protein. Is that the same for everyone around the globe or are there different kind of like dietary regimes, if you like, of how people consume food to bring those essential materials to their bodily health?

Christina: Yeah. No, I mean, fish is, I think, fascinating. [laughs]

You know, like, whereas when it comes to chicken or lamb, there's one species that we eat. When it comes to fish, there are thousands of species. The FAO reports, you know, over 2000 different taxa, you know, in their annual kind of reporting statistics. But there are many, many more species that we don't even, that, that people are, are eaten in, you know, rural communities.

So we, we eat this massive diversity. But, in the West, so in the UK, in America, we've kind of, our taste for fish has shrunk down. Um, so there's really five or so species of fish that we eat in the UK. There's like tuna, prawns, cod and

haddock. But, you know, so here our diets are fairly homogenous when it comes to, to fish. And so what we pair it with is fairly homogenous.

But then if you go to kind of places across Asia and Africa and the Pacific where a far greater diversity of fish is eaten, it's paired with lots of other different foods as well.

I guess when you, when we think of diets, it's important to understand, you know, the whole diet. So not just individual items on a plate, but what else is in that plate, and what else is in your diet.

And in places where I work across Sub-Saharan Africa, diets are predominantly plant-based and, you know, actually predominantly starchy veg based, which are really kind of nutrient poor. And so where fish are common in diets in those regions, they play a really critical role, because they're nutrients that are otherwise unavailable.

So in the UK we have this huge diversity of fruits and vegetables and we eat a real diversity of foods, even though we've homogenised our fish products. But in Africa, fish is the, a diversity of fish plays a really critical role in an otherwise homogenous plate.

Jan: And that's fascinating 'cause I, as soon as you said it, I thought, yeah, we don't, we don't eat that many different fish.

Maybe, maybe a little bit of, uh, I don't know, octopus if you're into, into that market, or a little bit of, of, um, squid. But yeah, it's really quite narrow, isn't it? I hadn't realised that. Had you realised that?

Paul: Cockles and mussels…

Jan: …oh yeah…

Paul: … occasionally, yeah. Morecambe Bay shrimp…

Jan: …yeah…

Paul: …but they're a totally different type of shrimp to other types of shrimp, as we've discussed in the past, there's different types of shrimp…

Jan: …yeah.

Paul: You wouldn't believe how often we've discussed shrimp on this podcast, Christina. It's…

Jan: [laughing] …you're in good, you're in good fishy company…

Paul: …it's bordering on being an obsession. Yeah.

But I, yeah, I totally agree with you. It is that, and even within those five, there's gonna be certain of those five that are dominating the market. I know, for instance, that we've got researchers both in the Environment Centre and in the Management School who've looked into the rise of farmed salmon as, uh, as a product that is sold in supermarkets, and how it's gone from being something that was a luxury product back in the 1970s to being just about everywhere now through, not just the salmon fillets that you might get, but also ultra processed stuff, like you get in your fish cakes that are full of it.

'Cause that makes a difference as well, doesn't it? How the fish is treated and what's done with it, so the amount of nutrients you are going to be getting and the things such as the omega-3 fatty acid that we keep mentioning. How much of that's there?

Jan: But that also introduces, uh, a whole dynamic, and I know that we are going to come onto this.

So, where you are raising fish and perhaps salmon being one of the, you know, largest single sort of global, you know, farmed fish, that fish for fish has to come from somewhere.

So, it'd be really nice to hear about some of those tensions and trade-offs as well.

Christina: Yeah, so I mean, farmed fish in general has taken off massively.

So, um, wild fish production kind of rose rapidly from the 1960s up until the 1990s, at which point it, it, it stabilised. So, we are not able to get any more fish from the sea. But in the 1990s, that's when aquaculture took off. And so it's grown at the same pace at which, over the past 40 years at which, um, wild fish grew the previous 40 years.

And aquaculture is varied, like wild fisheries. So you've got small scale aquaculture, you've got hybrid forms of aquaculture, you've got industrial large-scale aquaculture. And you can grow or farm a number of different species. You've got species that are, you know, filter feeders, like mussels. So they don't really even require any feed ,and all the way through to fish that eat other fish.

So what you grow, where you grow it, how you grow it, what you feed it, has a massive impact on the marine ecosystem. But in terms of the fish stocks that are left at sea, but also on the environment that it's being, um, grown in.

And as we've shifted across from more kind of small-scale aquaculture to industrial aquaculture that's rising to meet the kind of, you know, increasing demand for fish, we've moved towards these large-scale industrial, and often carnivorous species, like salmon that do depend on, on wild fish to feed them.

Jan: So, what does that mean for the people who, um, that we talked about earlier, for whom a variety of fish is important in a, in a diet, um, to bring and brings really important elements to it?

What has that sort of change in the food system meant for communities and individuals who have previously relied on fish?

Christina: Yeah. So a lot of my work is focused on, on West Africa where small pelagic fish, so Sardinella, for example, sardines, let's say are, are really cheap. And they're really, really nutritious and they've been really central to people's diets for a really long time.

So approximately 80% of animal protein in Senegal has been coming from fish, and about 50, 60% of that was the small pelagic fish. And that's been supplied by these local fisheries, um, canoes, um, pirogues that go out to sea and fish the highly productive waters that you've, the upwellings that you've got off West Africa bring large landings of catch that are dried by the women processors, transported inland, sold on the niche, near markets.

And there's a saying in Senegal, so these small Sardinella are really bony. So if you eat a tin of sardines, you'll, they, they're pretty bony, but the bones are pretty small. But the Sardinella in Senegal is a bit bigger than the ones that we get in, in cans. And there they have a saying that, um, it's the, Yaboye, they said it's lucky that they're so fiddly because it stops the rich people from fiddling with them.

Jan: [laughing] Oh…

Christina: …so, so it's a cheap source of fish because, you know, it's not easily, you know, appealing to a wealthy consumer base.

But since the kind of fishmeal industry, which supplies feed for the aquaculture farms, has taken off there has become a demand for the small pelagic fish that

are really fiddly, uh, ground up into fishmeal and fish oil and fed to the aquaculture farms.

So essentially it means that these West African fisheries, the small-scale fisheries, have been drawn into the global market and so they are at the market, mercy of, of market fluctuations, and…

Jan: …and how does that spatially work? Because presumably if I'm a, an industrial fisherman from somewhere else in the world, how close to the, this upwelling can I get in West Africa? And in terms of exclusive economic zones? Or, or do I get, can I buy a quota to get me in the, those areas? How does that, that governance work?

Christina: Yeah. So none of it's simple. [everyone laughs]

So I will try, I feel like I will give you long answers to all of this…

Jan: …that's, that's alright. I think long answers are maybe necessary in this context.

Christina: At the moment, in Senegal, the inshore zone, I think it's up to nine nautical miles, but it might be six, is reserved for the small scale fishing fleet. So yeah, on paper it's only the small-scale Senegalese vessels that are allowed to fish there, and that's where most of the productive waters are. And from six or nine out to 200 nautical miles is for vessels that have a license to fish in Senegal's EEZ.

But, that's not what actually always happens. So increasingly you've got these vessels that are kind of midway between small-scale and large-scale, and they incur into the small scale fishing zones. You also have the bigger vessels incurring, so you've got lots of overlap in terms of who's fishing where.

You also have the vessels that are licensed to be, that are Senegalese licensed vessels, aren't always Senegalese owned. You may have joint ventures, so actually you'll have it registered under a Senegalese name, but there'll be another co-owner that provides most of the finance, and that's a subsidiary of a larger company that's actually, you know, originates, say in Spain or, or somewhere in Southeast Asia.

So you have a lot of competition happening at sea, and it's very opaque who's actually fishing where and catching what. You then have the added dynamic, which is that over the past 10 years, we've had fishmeal factories springing up along the West African coastline, and these fishmeal factories buy fish from

both the Senegalese small-scale fishing vessels, but also from some of the more industrial vessels. And that's primarily the small pelagic fish, so the Sardinella, and they grind that up and then they export it.

The last dynamic, which may, is that a lot of the kind of joint ventures that you have, so Senegalese-looking vessels that have an international partner are obligated to export the majority of their fish outside.

So you have many kind of, you've got a number of different processes that are rerouting the fish, either through the factories or through export or through foreign fishing, um, out of where it, it is most needed.

Paul: You talk about it in the context of fishmeal. Is there a, with the globalisation of the food market generally, a demand for this for people to actually eat these kind of fish that the people of West Africa have been eating for all these many years, in their own countries?

Or is it being used for other purposes that the Senegalese, for instance, wouldn't have used it for?

Christina: Yeah, so the small pela, the Sardinella would've been eaten and is still being eaten locally. But fish consumption for Sardinella has halved in Senegal over the past 10 years. Um, and the Sardinella is supplying the fishmeal and fish oil industry, um, fishmeal and fish oil, you know, since the eighties has been, has been globally, has represented about 30% of, of global catches. And the amount hasn't changed too much. There's been fluctuations to do with El Niño events, for example, but in the like eighties 70 to 80% of that fishmeal was going towards the livestock, um, pets, to, uh, livestock industry.

Since aquaculture has taken over, the livestock industry transitioned away from using the fishmeal, um, partly because the price of fishmeal went up, and they realised they didn't need it and they could use alternate sources. And now fishmeal has primarily been rooted, about 70% of fishmeal goes to, um, aquaculture. So the carnivorous aquaculture, for example, salmon, sea bass, and trout.

Paul: But that's out of the geographic area of Senegal. It's not been used within Senegal in aquaculture, it's been used elsewhere.

Christina: Definitely not. It's being, it's supplying the, um, salmon that is no longer a luxury and is now affordable across much of the Western world.

Jan: So that's a big dynamic. And I know that, I mean, we've had conversations about corporations. Corporations are our joint interest in here.

So from your observations how are large corporations, in particular, implicated in all of that dynamic?

Christina: Fishery scientists have often focused on the scale of the fish, or the scale of the community, to really try and understand, you know, why our fish stocks are overfished. Uh, how is fishing pressure driving the depletion of fish stocks and what do we need to do to limit fishing pressure?

And there's been great progress in fisheries management, but it's really, really hard to reduce fishing pressure when the demand for that fishing pressure comes from a completely different location.

So in the context of Senegal, if fishing pressure is increasing, but that increase isn't only coming from Senegalese fishers, it's coming from a market demand that's supplying the salmon industry or supplying, um, other places, it's, it makes it very difficult for Senegal, I think, to identify what are the effective policy levers.

So, the realisation that it's very difficult to manage at that scale is what's kind of driven me to talk to you, and to talk to, to try and really understand, well, actually, how do those actors who are key nodes in the supply chain, what, what, what is, what are their logics, what are their motivations, and are there opportunities to kind of leverage fishing pressure in Senegal at a higher level up?

Paul: Do you think that these companies know what they're doing with the effects they're having on the local population, or because they're based in totally other parts of the world, it's just something that they don't even pay attention to?

Christina: I think it, I think they know. [laughs] If, if they read any, there's, I, I think it would be very, very difficult to be a corporation, uh, that engaged in the fishing industry anywhere in the world and not aware of the pressure that, um, the global market is, is putting on West Africa.

Paul: Well, I, I'd like to say, I get told off sometimes being too negative on this podcast. [Jan laughs]

I tried to say, is it possible it's all fine? But no, it turns out no, that there's no way they don't know what they're doing.

Yes. Yeah. They, they know, they know.

Christina: That doesn't, that's not to say it's a simple solution…

Paul: …mm-hmm…

Christina: …that's not to say that they're intending to undermine food security in West Africa. But they will know that the activities that they're involved in, embroiled in, are undermining food security.

Paul: The word embroiled has connotations, I feel. [Jan and Christina chuckle]

You said involved and it was fine, and then you said embroiled, and I'm now [Jan and Christina laugh] imagining all kinds of malicious enterprises that are taking place in, in, uh, fishmeal sector.

Jan: Well, I think what's interesting is it's, it's big name companies, um, and they might have more local names or joint venture names, but it's, it's very, it's transnational corporations who make certain kind of undertakings in their, their policy environment and their strategy and what their CEO says about what they might be doing.

But it, but they're in these really complicated areas, which I think they feel they can't *not* be in because there's so much resource there. That, that they see in their value chain. So it's a real competition between, you know, their imperatives and the imperatives of the system, which is, is quite different.

And so, is it the same corporations doing the catching and making the fishmeal?

Christina: They, they're definitely connected…

Jan: …yep…

Christina: …and part of what we are currently trying to uncover is exactly what those connections are and, and how connected are they.

Um, there's a disconnect between the kind of identity of the actors and corporations involved in West Africa and the global-scale analysis. So we've, we've been looking, we've been working with colleagues, for example, at University… in, in Santiago, University de Compostela de Santiago. I, I apologise, I've mispronounced that.

Um, and they've been, you know, kind of identifying the identity of, of the corporate ownership of vessels at sea. And we've been doing this in West

Africa and, um, the vessels that they find that are operating in West Africa, and they've uncovered the ownership for, don't appear in West Africa.

So there is almost this intention - don't appear in, um, the, those, those vessels that are actually licensed to operate. So there's a mis-fit between those that are according to the global data sets operating, and those according to the local data sets operating.

And so part of what we're trying to do is uncover this murky layer and try and see where those connections link up. So come back in a year.

[Everyone laughs]

Paul: What about people they're employing. Do they employ local fishers? You'd imagine they're the ones who are gonna have the knowledge of the best place to fish, to get what they're looking for?

Or are they bringing in external fishers as well?

Christina: So it, I mean, it varies. So in the factories, the fishmeal factories that are along the coastline, there is very little local employment. So the factories don't employ many people at all, and they're often managed by people who are from the country where the factory comes from themselves.

They will contract very precarious forms of labour for periods of time. So for example, labourers will literally be paid to ferry a bucket from the boat to the factory floor, and they'll be paid for each ferry…

Paul: …mm-hmm…

Christina: …so the incentive is to extract as much resources as possible, sort of old Fordism, I guess.

And, and then on onboard the fishing vessels there may be some local employment, but that work is also precarious. And, um, crew can change overnight. Um, crew can get stuck on board vessels for extended periods of time. So the, the employment that is there is very precarious.

Paul: I was harking back in my mind to the episode we did, Jan, on the Arctic. And when we talked about the industries that are developing in the Arctic and how the Indigenous populations are affected, and Mia Bennett, who was our guest then said, but look, it's not necessarily everything's negative because

people are getting jobs and they're getting livelihoods and they're getting stable employment from an industry that didn't exist previously.

And I wondered if that was gonna be the same case here, but it doesn't sound like, if there is employment, it's not the same kind of stability that's there and the certainty that comes with that.

You're not getting the good work, good conditions and everything that comes that you'd want if you wanted it to be sustainable.

Christina: It, it's also wiped out a whole sector…

Paul: …mm-hmm…

Christina: …so, in Senegal and Gambia, along the west coastline, women, the fishing sector is, is very gender segregated. So men go out to fish, uh, do the hard lifting work, and women sell the fish and they process the fish.

And so the fishery, the local fishery, being drawn into the global market means that the role of women in particular, so the processing and the trade, no longer exists. So the precarious work is for men, and women's jobs have either been taken over by the machines in the factory, or they've been exported to the global companies.

Jan: So, we started off by recognising that there's a link between, you know, the fisheries between employment and livelihoods, and also human health with these, these lovely, um, you know, tremendously good fish.

But we know that being disrupted through the industrialisation of, of the process and indeed the elimination, as you said, of a whole layer of employment, that must have some kind of health impact.

Is that sufficiently large that governments in the region are starting to see health outcomes from this influx of industrialisation of, of a otherwise, you know, local food source.

Christina: Yeah. So, I mean, in, in part, yes, uh, the impacts are visible. Uh, is it galvanising action? I, I do think the governments are responding as much as they possibly can.

One of the challenges is picking up the, the outcome linked to a specific change. And we know fish consumption has halved, so we, we can quite reasonably draw a conclusion that that is gonna lead to higher rates of stunting, higher rates of malnutrition.

Being able to demonstrate that is a lot harder. Um, partly because of the data requirements and also the time to those impacts. Um, we have managed to show in a study led by a colleague of mine, Cristina, here at Lancaster, who's just moved to Barcelona and Spain, how proximity to the factories is undermining, um, fish consumption, particularly for the poorer households.

So it's, those who are going, who are being hardest hit by these impacts are those who even in Sub-Saharan Africa are the most vulnerable. Um, other reported sort of health impacts of the factories in particular that we're beginning to pick up some signals of in the dataset as well are, um, respiratory illnesses because the, the pollutant, the air pollutants, but also pollutants into the waterways.

So, so generating the evidence base for the impacts that people can see and are aware of takes time. And unfortunately, yeah, the onus is on us to generate that evidence to then kind of, you know, leverage policy or leverage new legislation on, on the companies.

Paul: So then, is there anything that can actually be done, Christina, to remedy these problems, to help stop the negative effects and make things more positive going forwards? Or are there issues that even stop people trying?

Christina: Yeah, I mean it's, it is very difficult, partly because it's a, you know, complex, wicked problem. The fishing sector is embedded within a country and the relations that a country, for example, has with her trading partners therefore involve the fishery, but also everything else that that country, um, takes into them with any negotiations. So, so it's never quite as simple as stop fishing…

Paul: …mm-hmm…

Christina: A, because it's very difficult for Senegalese people to stop fishing 'cause it's a critical source of income and employment. B, 'cause it's very difficult for Senegal to stop international vessels to stop fishing.

In 2012, I think it was, Senegal stopped most of their international fishing licenses. So if you look in Senegal, there's at the moment is what, they've also suspended the two agreements they have with the EU, it looks like there's no international fishing at all happening in her waters, which looks like the right policy response.

But we know, based on analysis by colleagues of us, that actually a large majority of the vessels there are owned by Spanish companies and Chinese companies.

Um, I think maybe some of the kind of new legislations and policies that could emerge, that could directly link to the health and food security dimension, is requiring fish to be, you know, proportion of catch or a proportion of what's being routed into the factories, to remain in domestic markets. Um, a proportion of what a, you know, international agreement is catching to be, remain in the local markets. So maintaining that local supply as a primary before anything is exported out of the country.

There was some research in Mauritania that showed that after this kind of an agreement, um, was negotiated between, I think it was Mauritania and, and one of the EU countries, um, fish consumption in, in Mauritania increased.

So it does show that these policies, even though they're not fixing the problem, can have positive impacts, particularly if they're designed to make more fish available, uh, for local consumers.

And if they could target the most vulnerable, so lower income households, women and children, they'd probably, perhaps through school feeding programs, they could be more, more effective.

Jan: Uh, we started out on the podcast, um, uh, quizzing my, my fish-eating patterns, which I'm now not sure ,what do I eat now? There's nothing left.

So is there any way a consumer could it make choices that would have a, an effect somewhere out in that system? Or is it truly too far away for an individual consumer and it's these, at these intermediate layers of, you know, trade policy, you know, um, fish governance, et cetera, where the difference can make?

Is there anything that myself, as a representative of our listeners could, could possibly think about doing?

Christina: Yeah, I think, um. Um, I mean, I think because it's a complex problem, I think we need to use all the tools available to us. So, one strategy is never gonna fix the problem, but in combination, you know, trade agreements, um, legislation in country and, and public pressure at that, you know, global and international level in terms of, where your feed's coming from, what your fish is being fed, there, you know, there are innovations to phase out while

cooked a wild-caught feed into farmed agriculture. Um, even for salmon, it's just more expensive now. So, putting that pressure onto companies to, to shift even further across, to reduce.

But, um, in fairness, you know, aquaculture has done a great job of reducing the amount of wild feed that goes into its fish. And the argument, they, the argument from the aquaculture industry is they need to retain a portion of wild feed because it stimulates the appetite, and so then they produce more fish. But that fish is not going to the consumers where the feed is coming from.

So, so they do make that global food security argument, but there's a disconnect between the, the consumers who are getting the win and who are paying the price.

So I, I do think, you know, pressure, consumer pressure on farmed aquaculture to just keep innovating away from, from, from harmful pressure.

Paul: So we're coming towards the end, but before we let you go, what's next then for you in this area? And what developments can you see happening in this sector?

Christina: Yeah, so I mean, I feel I'm also embroiled in this problem. [laughs]

I don't think I can... [laughs]

Paul: …Are you the one, are you one of these shady companies? Is that it? Is this your, your deep, deep dark secret…?

Christina: …my exit strategy? [laughs]

No, I, I mean, I am continuing, you know, I, I think I, I'm continuing to work in this space, continuing to understand, you know, trying to really uncover the role of those corporate entities and how they are connected.

How, how is it that we, we can see the problem is that West African fisheries and West African fishermen have been drawn into this global market, but we don't really understand why or how?

And I think really trying to understand, um, make those connections, but understand the logics through which they've been drawn in, and trying to unpick some of them it will be the space I'm working in.

And then going global, 'cause, you know, everything, everything goes global.

Paul: Yes. Yeah. But much as these companies have demonstrated…

Christina: …yes…!

Paul: …you don't just stick to Senegal. You spread all the way around the world. [chuckles]

Well, we look forward to seeing your super villain story unfold, Christina, as you take over the world…

Jan: …super, superhero story.

Paul: I'm not sure, there was something in the tone, but thank you very much for joining us today. It's been a really good conversation.

Christina: Thank you very much for having me. I've really enjoyed it.

[Theme music]

Paul: Are you gonna reconsider now, Jan, what kind of seafood you eat, how you eat it, where it comes from? Are you gonna be analysing packaging intently? There's a lot more to consider than you may have ever considered before.

Jan: Well, I think I'm still safe with, with haddock, and you're probably still say for cod if you like, if you like cod.

Paul: Yeah. They're, they're wild caught…

Jan: …yes…

Paul: …more essentially, so you don't have to worry about the fact that where's the fishmeal come from and how's that affecting people, that's gone into them. Yeah.

Jan: It certainly matters then when you're into, like, sea bass, um, salmon, et cetera…

Paul: …mm-hmm…

Jan: …is that then you've got, you've got a complication. And knowing that complication there is, is, is quite important, but there's no way as, uh, either, you know, a supermarket or even as an individual consumer, you can start unpicking that.

But there are, um, certification bodies that operate in this area that certify fishmeal as being, coming from a particular source, or produced to a particular

standard. So it's not, uh, an area where there's nothing at all to, to try to start sorting out some of those ties.

Paul: And I know there's sustainability labels as well on things such as salmon, with farmed salmon, but I also know that the people who give them, there's so many different bodies who give sustainability stickers, and are they all measuring the same thing? Are they measuring the things that you want to know?

It comes down to benchmarking. I think, Jan, [Jan laughs] that's it. You need more benchmarking. That's it.

Jan: [laughing] Possibly. What I really liked about Christina's conversation with her and what I really like about her science is this whole generating evidence that she puts together.

So really, you know, tracking, you know, factories and, and we, we've worked together a little bit because unfortunately there is no single database of like, who owns a factory? How can you find out, um, you know, what registered, it might be registered in country, but if it's privately owned, it won't have, so it won't have like full accounts or anything like that.

We've always been trying to piece together the evidence of what is actually happening in the corporate infrastructure. Because that then actually influences and connects to this, this global trade, and particularly the trade in nutrients is one way of that, that you can frame what's going on, but also then links to health outcomes, government action, et cetera.

So it's a scalar problem, of which companies are sort of threaded through it.

Paul: And you see Senegal and the instances that Christina has mentioned there, about the fact that boats from outside Senegal are not meant to be fishing there, but you've got boats that are registered in Senegal but are really from companies that are in Spain and China, and they're using legal and corporate loopholes to get through and take it all out.

And the whole complicated nature, the web and the tangle that there is to try and find out. And when you ask Christina, is this an easy problem to solve? It's so obvious it's not, because the, how do you get right down to the nub of it and figure out who it is that is actually doing this, and then figure out how to stop them.

Jan: And even if there isn't, uh, a legality, which in many cases there won't be, the murkiness, is a, a lack of transparency about what's going on. And if, if any area that's non-transparent, you don't know how to intervene and you don't know what the outcomes are. So that transparency is a big part of the, the picture as well.

Paul: And it's really hard to overstate how big an impact this might have on some of the populations we're talking about. When Christina says that long term in Senegal, you've seen a halving of the amount of fish, fish consumption for a country where the fish were providing such vital micronutrients for an otherwise plant-based diet.

It's not like here, where if we were to suddenly say, oh yeah, you're not allowed to have haddock anymore. Sorry Jan. No more haddock for you. You find an alternative, it's quite easy. We're in that, the kind of country where you just go and choose something different, where you've got the vast amount of choice, whether that be at the supermarket or you know, a local fish and chip shop, even, you can get an alternative if there's no haddock.

But for some of these poorer people, and as Christina says, it's poorer people within relatively poorer countries. So, they're right at the bottom of the scale. They've not got that choice of getting something different.

Jan: But then also, like the government of Senegal, I think, you know, will be acting in good faith and trying to do the best with all the different demands that will be on them as a government.

And so government action is also really critical in this area as well. It's not just NGOs or, or corporations. The government is central.

Paul: And seeing the fact that it's not just issues around diet, but then you see the gender implications, um, with women being the ones who are losing their jobs. And the overall employment and the labour market implications because of what's happening, and the people that are on these boats are in these factories who might be employed from the local community, are on precarious, not even contracts, it's just precarious situations for 'em.

Jan: Yeah. Big stuff.

Paul: It is. So, Jan. I feel an anniversary coming up.

Jan: [chuckles] I'm not turning 60 yet.

Paul: Yet? I thought that was years ago. [Jan laughs]

No, not for us personally, but for the podcast.

Jan: Really. What, what number are we looking at? I like numbers.

Paul: You like numbers? How do you feel about the number 100?

Jan: I think 100 is a really nice round number that feels, you know, significant in some ways.

Paul: It does, it does, because next week we're gonna be doing our 100th episode…

Jan: …woo-hoo…

Paul: …of Transforming Tomorrow. Um, a hundred episodes, I didn't know we'd ever make it this far, but we somehow have, and neither of us has killed the other. So that, that's good.

And as part of our 100th anniversary, we're gonna be welcoming a politician who's been part of the Malaysian government in the past.

Jan: And I think it's a really nice follow on from what we've been talking about today and in many other of the podcasts as well, is to consider that role of, uh, governments, but also ministers, but also parliamentarians as well.

Paul: Yes. So, Nik Nazmi's gonna be joining us. He's been a minister in Malaysian government, and he's also been involved in major global events as well, when it comes to things like COP and such like that.

So he's gonna be able to give us the inside scoop on what it's like to be a minister with responsibility for the environment, and how your behaviour and politics and attitudes can be changed.

Jan: Brilliant.

Paul: Until then, thank you very much for listening. It's goodbye from me, Paul Turner.

Jan: And it's goodbye from me, Jan Bebbington.

[Theme music]