When Science Finds a Way

Season 1, Episode 3

How can we work on a heating planet?

(Music starts) *00:00*

KATHY CLIP - *"Nobody has to die from heat. This is one of the most positive things for an agenda to tackle climate change is that nobody has to die"*

Alisha 00:15

Welcome to When Science Finds a Way … A podcast about the science changing the world. I'm Alisha Wainwright. And I'm here to tell you about the ideas that are actually making a difference at a local level right now.

Because when science gets translated into tangible solutions … that's when I get super excited. And that's what we're going to hear about in this episode.

KATHY CLIP - 00:40 *"you prioritise the places where people are most vulnerable, you identify the interventions that are going to be the right interventions for that community, and you start doing it."*

Kathy Baughman-McLeod is the director of the Adrienne Arsht Rockefeller Foundation Resilience Centre at the Atlantic Council - but she says we can just call it Arsht-Rock.

They're working globally to reach one BILLION people with resilience solutions to climate change by 2030. Their research is backed by their Chief Heat Science Advisor and two multidisciplinary international science panels. And that research is not JUST showing how EXTREME HEAT is affecting our health and our livelihoods, but ALSO enabling solutions.

And these are straightforward solutions. Naming heat waves. Finance initiatives to support Indian workers in extreme temperatures. And, as you'll hear, providing shading to help market traders stay cooler in Sierra Leone. These ideas often come from the communities themselves - AND they're empowering local women to take ownership of these solutions for the future.

KATHY CLIP - 01:52 *"Women are an awesome investment. And because of the disproportionate impact from heat, it only makes sense that they are disproportionately represented in the leadership of taking it on."*

Heat's often called a silent killer - and when you hear that phrase, it can feel overwhelming. But it was amazing to hear about science providing tangible solutions … and Kathy also gave a few practical tips about what we can all do to cope better with our changing climate.

First she told me why heat’s so bad for our health.

(Music Ends)

Kathy Baugham-McLeod 02:33
Heat is a stress and it's a shock. And so you can slowly face heat and have slow onset of the effects of heat, the ill effects like muscle cramps and excess sweating, or the chills or nausea, headaches, rashes, those things are all symptoms. But then there is also a heat shock like the heat dome heat wave of the summer of 2021 in the pacific northwest of the US and in British Columbia in Canada where 1200 people died, and that's a real shock. Those people never expected those temperatures. They weren't in homes that were built for those temperatures. They don't wear clothes that are right for those temperatures. And so that was a shock of all shocks that killed a whole bunch of people. So there's both and our bodies are best at a certain range of temperatures. And we've heated our planet with our eyes wide open. And now we're feeling the effects of it right down to our bodies and in our communities and in our infrastructure, and through our health system, all of it.

Alisha Wainwright 03:42
And what’s your research showing you about when heat becomes dangerous? Is it a specific temperature? or are there other factors at play?

Kathy Baugham-McLeod 03:50
The most important predictor of health impacts from heat are nighttime temperatures. When we don't rest and clean our brains at night, by being cool and sleeping…. we wake up tired, we make mistakes, our hand eye coordination is off, or slow. And so there are lots of studies and great datasets and workers comp data that show when there are spikes in nighttime temperatures, yes, daytime temperatures too. But where part of our campaign is to get people paying attention to nighttime temperatures. That you will see people coming in to seek medical care. And sometimes you know, it's too late because it comes on so quickly,

Alisha Wainwright 04:39
Who is most vulnerable to heat stress?

Kathy Baugham-McLeod 04:42
Some of the people most vulnerable to the effects of heat are senior citizens, older people, people with underlying conditions, women, girls and pregnant women. Women are physiologically and culturally disproportionately affected by heat. And children. And oftentimes, what it feels like in a community that has been under invested in those communities are often 14 to 17 degrees hotter Fahrenheit, than communities that are Leafy and cool with lots of green space and lots of tree cover. And so you are exponentially more exposed to extreme heat.

Alisha Wainwright 05:27

We’re going to take a walk now through Smythe Street Market, known locally as Congo Market, in Freetown Sierra Leone. Not only is this nation one of the most climate vulnerable countries in the world, but Freetown is a city that rarely cools down. It has a tropical climate- so there’s little variation between seasons, high humidity, and warm nights - averaging 23 degrees Celsius - or 73 degrees Fahrenheit - at night - all year round. The Congo market is a huge outdoor market where thousands of traders, often women - work under direct sunlight. It’s a bustling place with all kinds of vegetables, spices, meat and fish piled up high to sell in the open air.. Here’s the chair lady of the market telling us about life under extreme heat…

Ya-Alimammy Fofanah 06:24
My name is Ya-Alimammy Fofanah. And I'm doing business at Congo market. We are at the market place right now. The temperature is very hot. Before this time, it was very difficult because no shade, we are under the bare burning sun. And out of that sun every day, day in, day out, day in, day out, people suffered a lot. People had to suffer from Malaria, Typhoid, low blood pressure. For those that are selling perishable food, it’s too bad. Raw fish, raw meat, anything that is raw. The sun will try to reduce their value.

Alisha Wainwright 07:19
So Ya-Alimammy spoke there about some of the health impacts of the heat… increased prevalence of diseases, changes in blood pressure… What do you take away from what she said?

Kathy Baugham-McLeod 07:32
It's just more and more evidence that the world we're living in, particularly in latitudes of the planet where heat is a constant pull at your health and your income, and your well-being, that the need for action is just so urgent. And all of those things that she describes, as people work to pull themselves out of poverty, heat is pushing them back down. And she's describing it beautifully.

Alisha Wainwright 08:10
I mean, when she talks too about, you know, people who are selling meat, you can't even make money in the heat, because if it sits out there too long, it goes off.

Kathy Baugham-McLeod 08:21
It also means that you're going to have to spend more of your money on cooling techniques. We’re looking at all manner of how can we help protect the livelihoods of people like Ali mammy, and the other women in the market. And, you know, what are the things we can do right now? And what are the things that we need to do longer term to try to stop it? And the quantitative fact of their loss, the loss of the produce, the loss of the meat, the loss of the income means a profound setback for the entire community.

Alisha Wainwright 09:01
You know we're talking about women who are working outside but what other jobs are most vulnerable to heat stress?

Kathy Baugham-McLeod 09:09

Jobs most vulnerable to heat stress are people who work in warehouses that are un air conditioned, people who are agricultural workers who are picking fruits and vegetables out in the sun all day, and oftentimes there are office buildings that are not sufficiently air conditioned or cooled or not at all, and workers in offices can show the effects of heat quite profoundly.

Alisha Wainwright 09:35
Let's talk about how we can help people working in heat. And to be clear, these aren't solutions to climate change itself. But ways to make us more heat resilient. What does your research tell us about how we should start helping people when it comes to heat? What are the most important things we need to do to make people more resilient?

Kathy Baugham-McLeod 09:58
The number one thing, people do not sufficiently know how dangerous it is, we have to create the awareness. That's why it's a silent killer. No one's talking about it. And so you have to make people aware. And then you have to have actionable guidance, what should I do to protect myself? And then you have to know which channel of information to deliver that guidance. And so that's the first step is to get people information because nobody has to die from heat. This is one of the most positive things for an agenda to tackle climate change is that nobody has to die. If they're sufficiently aware, they have somewhere to go to escape it. And they are empowered, entitled and have agency to protect themselves and their families, then, you know, we're gonna do this.

Alisha Wainwright 10:46
And one thing that you've done at Arsht Rock is to create this role of Chief Heat Officer in cities around the world. Can you tell me where they are and what this role involves?

Kathy Baugham-McLeod 10:58
So, Chief Heat Officers: Miami Dade County in Florida, Santiago de Chile, Athens, Greece, Monterrey Mexico, LA, Freetown, Sierra Leone, Melbourne, Australia, and Dhaka in Bangladesh. And so what do they do? They wake up every day thinking about how to protect people from extreme heat. They form Heat Health Task Forces in their community. You create a heat action plan, you prioritise the places where people are most vulnerable, you identify the interventions that are going to be the right interventions for that community, you identify the funding and financing for it, and you start doing it. And the very first thing is making people aware and making sure people know where to go. you get neighbours meeting neighbours, there's a social cohesion and capital part of this too. You know, the number one reason that people survive a disaster is because they know their neighbour and their neighbour's watching out for them.

Alisha Wainwright 12:01
Oh, wow, I didn't I didn't even know that. But it's, of course, it makes the most sense. I I will say what I love about what you're trying to do is get the community involved by placing a chief heat officer who is from that area who has, you don't have to re-educate a new person into the area to be able to get their pulse on the community, you have someone who already is a member of that community, who is able to start influencing some policy. I think that's incredible. Something else I noticed when I was doing

research was a lovely photograph of your chief heat officers. They look like Charlie's Angels of you know, kicking heats butt. I wanna know why are women the face of this change?

Kathy Baugham-McLeod 12:38
Women are disproportionately impacted by heat, for physiological reasons for cultural reasons for the clothes we wear, for the responsibilities we have in the home and with our families. And so we wanted disproportionate leadership to solve that problem. All of the statistics tell us that investing in women rises all boats and women leading countries had fewer deaths from COVID . They have more environmental protections,￼ have more investment in early education. Women are an awesome investment. And because of the disproportionate impact from heat, it only makes sense that they are disproportionately represented in the leadership of taking it on.

Alisha Wainwright 13:24
Let's now head back to Freetown … because Eugenia Kargbo is the city's Chief Heat Officer and she told us about the work she's done across the city, including a project to protect market traders like Ya-Alimammy…

(music, into)
Eugenia Kargbo 13:41
Heat is a challenge affecting different people in different areas, but more so the most vulnerable of our population. So people living in the informal settlement, people who are outdoor workers, people earning less than $1 per day, women are also disproportionately affected by extreme heat. And so the city had to act. Out of Freetowns 42 markets 17 of them are open air markets without any shade, or any structure. The market shade cover project is a locally led adaptation project to protect women from the risk of extreme heat. The project made use of low cost locally made material called Danpalon, and the material is waterproof, so it's sustainable throughout the raining season. It's semi translucent, so even though it reflects the heat, it allows enough light to go through and design also took into account airflow to ensure that there is proper ventilation for the women. And underneath the shade cover, We also have installed solar lights that secure the energy from the sun during the day and produce light for the women during the night. There are also other initiatives that we are working on, we are working on improving green spaces across the city - small community gardens that the community can use to cool off. Already, we've planted 700,000 trees, and we are in the process of planting 250,000 trees over this raining season. So the intention is to plant a million trees. But that's just the beginning. The dream is to make Freetown a tree town and a blueprint for other African cities to replicate.

(music, into)
Alisha Wainwright 16:07
What's your take on what you just heard Eugenia say?

Kathy Baugham-McLeod 16:10
When I hear Eugenia's account of all that they are doing and all she's leading, I feel pride that a city can build an agenda and deliver on it in such a short time in total collaboration hand in hand with the community who is most affected by it. And it reflects such agency that, you know, Freetown is a tree

town, the design of the shade structures. It's inspiring, and it shows you that you you can do it, you can set your plan and get people together and do something and

Alisha Wainwright 16:49
And do something! And is this a typical example of what Chief Heat Officers are doing? I mean, is it very specific and targeted

Kathy Baugham-McLeod 16:57
There are really specific micro interventions like that, just like in Miami Dade. If you look at the Heat Action Plan, there's a focus on people waiting for the bus and the pedestrian corridors in communities in which under investment has been a real problem. They've had incidences of people passing out or even passing away in the bus stop waiting for the bus.

Alisha Wainwright 17:24
Wow.

Kathy Baugham-McLeod 17:25
So there's a real focus on making those bus stops safer, cooler, greener. In Athens. It's about pocket parks that are strategically placed in dense areas where lots of urban heat island effect is happening and to try to break that up with some relief. And then we are starting specifically on early warning for folks in Dhaka. That we need to right away, start to educate folks because people think it's just hot. And so what are the things that people need to do and to know, and so those things can happen really quickly. And we've created this Extreme Heat Resilience Alliance.-And so there's a community building, there's lots of action, there are things you can do and people's lives are being saved, and communities are changing.

Alisha Wainwright 18:11
Freetown is sort of the blueprint for these African cities. what's being learned there in Freetown that we could start applying elsewhere.

Kathy Baugham-McLeod 18:23
One of the coolest things, pardon the pun, that is happening in Freetown is the Freetown is the tree town programme, and they use an app and citizens are encouraged to adopt a tree in the app. And so to have the community so incredibly invested, that they have a photo of it, and that they report on it, and that they're incentivized to do that. That's pretty cool. And then one of the best stories out of the market shading project is that after the first three structures were built, it didn't cover everyone in the market. It's a pilot. And the women in the market said, we like this so much, we're going to raise money and do it ourselves. And so there's such ownership over the structures that they wanted to pay for how they replicate it and put it over every market.

Alisha Wainwright 19:16
Something I've been learning through talking to brilliant people like you over the course of putting this podcast together, is that when you create actionable options for people in the community, you create a real sense of ownership to make change happen. And you can't have this sort of colonial perspective,

which is I'm going to insert myself into the situation. Look at what you need and give it to you. It's not the way to do it anymore. Ask someone what they need, assess what the community is looking for, and then create that snowball. You did a pilot project in a community. And within a very short period of time, this community saw the benefits of it. And they're like, Okay, thanks so much for your help. We've got it now. And that's ultimately what you want. You don't want to be in a situation where you're having to constantly go in and insert yourself into communities, you just don't need to do it. Ya-Alimammay from the market talked to us about the difference the shade project has made to her and her community:

(music, into)

Ya-Alimammy Fofanah 20:29

With the help of this shade cover. See, where I am now, under the shade. So these shades help us so much. Changes has happened to some of us, some of the women, we are much better. We know that if the rain comes right now, we are protected. If sun is out now, we will be protected again. So with the help of this shade, we have seen a great difference. For instance, for me selling this I won't use another plastic or something else to cover, won't buy umbrella, we won't buy plastic, it's a plus to our business. The solar light solar light, it's a big impact on our life and the lives of us living in the community. Because not even the light is purely for the business people. But for us in the community, the solar lights will take us through all of the night. So, this alone is a great beneficiary to some of us living in this Congo market community.

(music, into)

Alisha Wainwright 21:48

She mentioned there how the solar lights have benefited the wider community. But they also enable the market to run later in the day, don't they?

Kathy Baugham-McLeod 21:56

They also provide more security. So, when women are leaving their stalls, and they have the earnings for the day on them, the lights make them feel safer, because they're less risk of being robbed. So yeah, it has safety effect, it has extended the market hours, so there's more income opportunity. It makes you think that the sky's the limit on what you could do… if we can do solar lights, let's do solar power, if we can do solar power, let's do cooling. Let's provide chillers for the produce and the maintenance so that they can extend the life of their products. And can we make them thermally more comfortable as they go about their day? And can we do that in a clean way without waste heat and the emissions that come with air conditioning and other mechanical cooling?

Alisha Wainwright 22:51

Hearing about your work really does give me hope. I know you've got another really interesting project you launched recently in Ahmedabad in India to help informal workers. Tell me more about who you're working with

Kathy Baugham-McLeod 23:04

We work with the Self Employed Women's Association. It's a 2.6 million women strong labour union for women, day labourers, women in the informal economy, who are doing lots of different types of jobs.

So, they work in 120 different trades like selling in the market. They are construction workers. They are waste recyclers. They work in solid waste facilities, and they pull out recyclable materials and sell it. They're head loaders, they move goods on their head, from wholesalers to retailers. They're working at home, they're doing needlework. And all of these women are disproportionately affected by heat. When they use tools for certain things, those tools are not made for the temperatures they're working in, they have blisters on their hands. They have a rash that used to be about four months out of the year. And now it's 12 months out of the year. They miscarry, their babies, they have headaches, they are missing time at work, because the hours they used to work are so hot, no one can work. And the hours that it shifts to are the hours where they have to take care of their kids. And so oftentimes, they're the primary breadwinners. And so this organisation, the Self Employed Women's Association is providing savings accounts, bank accounts, access to credit, access to education for their kids and health care. The one thing knocking these women back down into poverty, or further into poverty is climate. And it's extreme heat and flood. And so we work with SEWA to create a package that includes a micro insurance that pays them to not work, essentially, when it's too hot, and their health is affected. When a certain trigger is met of a composite of temperatures and conditions, a payment goes to their bank account. And so that's one of the ways that we are trying to hurry to show solutions for women most impacted, and it's their income because they gotta feed their kids and they are working hard to climb out of poverty, and we want to do everything we can to help them make that journey. But again, they have agency they're fighters, they know what they need.

Alisha Wainwright 25:27
That sounds like a really valuable programme that could potentially be applied anywhere in the world... I'm talking to you from California, where we've also been experiencing more heat waves and more extreme temperatures... just where i am now in Sonoma County, temperatures reached 115 degrees Fahrenheit last year - that's 46 Celsius. It's a real challenge for agricultural labourers here, who oftentimes have to work at night to keep cool. Has your research led to much tangible change in the US?

Kathy Baugham-McLeod 26:00
One of the things we did right out of the gate when President Biden was elected, was to bring new economic information to extreme heat to try to bring new data to the climate policies that were clearly going to be coming out of the administration. And we wanted extreme heat to have a really strong presence in that set of policies. We partnered with a group called Vivid Economics and we assessed the worker productivity losses of extreme heat to the US economy. And the baseline number - and this is just one aspect of extreme heats, economic effects. So it's not business interruption or infrastructure or health care. It's just the losses from a worker who has slowed down from being sick, or being hot. That number for 2020, which is the baseline is $100 billion is lost and growing to the US economy from this silent-impact that's just draining our economies. We were ecstatic when the White House and the Department of Labour cited our economic analysis in their press release, saying we will be creating a new rule to protect all workers across the US.

And we have developed an algorithm with our chief heat science advisor and science panel. This algorithm takes in all these factors that predict your specific communities impacts of heat. And so we take Local Data, local health, mortality data, with this jumble of things like nighttime temperatures of the

last 10 days and the temperature in the daytime and the cloud cover, and we put it together and we can predict an increase in all cause mortality for four or five days out. And so that categorization system is now reflected in California law. And so thinking about how to reach millions and millions of people with projections, not afterward but beforehand so people can get ready, and thinking about health and your community. That's one of the big breakthroughs that we are most excited about.

And wait It gets better. Added a name. So now heat waves have a name. We had a heatwave Zoey last summer. Next one is Jago in Seville. And so that has kicked off. And so it is our aspiration that everywhere, where it makes sense where you have the categorization, underpinning it, or, or using the existing heat health warning systems and notification of the Met services, put a name on it, because we're about to put out the manuscript that shows the evidence that having a name helped people get ready. They paid attention, they took the advice of the government more seriously, because it had a name. And so it looks like we're gonna keep evaluating and keep improving. But if there's one thing that we can do is bring these categories that are preventative and heat health base for specific communities, and tack on a name, give it a brand and promote the bejesus out of it.

Alisha Wainwright 29:22
Everything you're doing is inspiring and hopeful. But what do you say when someone has a sentiment? That is, shouldn't the ultimate goal be to stop climate change in the first place? Why don't you focus on that?

Kathy Baugham-McLeod 29:38
How's it going for us so far? We've set a goal of not going past 1.5 degrees above pre industrial levels. We've assessed from the last intergovernmental panel on climate change on the science body of the UN, that we will indeed, very likely go past that 1.5. We're already at 1.2 or 1.3 plus in degrees

Alisha Wainwright 30:05
That’s pretty close

Kathy Baugham-McLeod 30:09
So we don't seem to be able to do this. And yet we have everything that we need. And so while people who did little to nothing to contribute to it suffer the most, this is our agenda at our Schrock is to move as quickly as possible, to partner with people to build community and individual agency to take this on and working at the system's level. And there are things that are both addressing the the root cause of climate change, and the adaptation strategies of climate change, which are nature based solutions and

Alisha Wainwright 30:47
sustainable light sources and these other things that we were.

Kathy Baugham-McLeod 30:51
Yeah. And they're investable, and they're fabulous. And we can do them. While we continue to put the pedal to the metal on addressing the root causes and to reduce our emissions. We have to also run like hell to protect people who are being affected right now. their jobs, their health, and that's the future of all of our economies, and all of our families. We have to do it now.

Alisha Wainwright 31:21
OK, so many people listening to this may already be seeing the impacts of extreme heat where they live. What would you want them to know? Are there any practical takeaways for them?

Kathy Baugham-McLeod 31:33
Everybody should conduct a personal heat risk assessment. Are you yourself more vulnerable than you knew? Are you taking medications? Do you have any underlying conditions? What about someone in your family? Is your house designed for airflow? Do you need something else to cool you? You might think that you don't. But this is the thing about heat, it creeps up on you. And so think about yourself, and think about your community. And also think about who you want to call when a heat wave is coming. Maybe a neighbour didn't hear about it. Maybe your grandmother or your sister who just had a baby, maybe she doesn't know about it. So call the people in your life and make sure they know that it's dangerous. And then think about your role in the community. Think about your civic role. Push your elected officials and your leaders to enact heat action plans. Appoint a Chief Heat Officer. Act on climate. Are you acting to address the root causes? And are you acting to protect people from the impacts of it? And you have voice, and you have agency.

Alisha Wainwright 32:39
Kathy, thank you so much for talking to me

Kathy Baugham-McLeod 32:43
Thank you for what you're doing.

(Music starts)

Alisha Wainwright 32:50
Thanks for listening to this episode of When Science Finds a Way. And thanks to Kathy Baughman-McLeod, Eugenia Kargbo and Ya-Alimammy Fofanah. It's amazing to hear how research can lead to such tangible solutions - and I was uplifted to hear that nobody has to die from heat.

When Science Finds a Way is brought to you by Wellcome. If you visit their website - wellcome.org – that's with two L's - you'll find a whole host of information about how climate change is impacting our health, as well as full transcripts of our episodes

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Next time, we'll be talking about a health research project that has tens of thousands of participants, and no end date. And we'll be asking: Can a research study change a city?

When Science Finds a Way is a Chalk and Blade production for Wellcome – a global charitable foundation that supports science to solve the urgent health issues facing everyone.

(Music ends)