

JFAC S4 Ep.4: What do rising temperatures have to do with taxi ranks?

Dr Thandi Kapwata: [00:00:00] When I first started, um, in this field of research, there was very little, um, evidence on the health impacts of heat in, in Africa and over the years, this has been changing. There is much more research coming out of Africa, uh, looking at the direct impacts of climate change, in particular heat, on health, public health as a whole.

And I think that is because of the fact that people are understanding the, the growing urgency, um, and the fact that the impacts of climate change are becoming more apparent, more severe, and more long lasting.

Ntombini Marrengane: Good public transport is one of the cornerstones of a working and productive country. When large numbers of people can move around safely, affordably, and efficiently, they can access opportunities and services that have the potential to grow the economy and improve their lives.[00:01:00]

No wonder then that expanding public transport forms part of the UN's Sustainable Development Goals for 2030. At the moment, not all transit networks are created equal. As we adapt to a changing world, we need to ask, are all transport users, especially the most marginalised and vulnerable, able to travel safely to access work, healthcare, and education?

How do these needs change as our planet keeps getting hotter?

World Bank YT Clip: Mobility defines the human race. For millions of years, we have travelled the planet, settling one day, moving on the next. Transport modes have rapidly evolved, increasing in speed, autonomy, reliability. They make us go faster and farther every day.

But mobility is not immune to the urgent challenges of this world. More people, more cars, a [00:02:00] changing climate. The mobility choices of today will either lock us in congestion and pollution, or they will open the way for new possibilities, access for all, efficiency, safety, and climate respect.

Sustainable mobility for all is not a dream, but it requires a revolution.

Ntombini Marrengane: In India, buses are one of the most popular modes of transport in cities, but extremely hot days can expose commuters to unpleasant, uncomfortable, and potentially dangerous conditions. Risks that fall unequally on vulnerable groups in the community.

To respond to this challenge, a design competition was held to standardise bus shelters on all national highways across India. The Council of Architecture called for design proposals that catered for all weather conditions, with sustainability features embedded. Some of these features were systems for harvesting rainwater [00:03:00] and solar panels to generate energy.

Safety was also a priority, so submissions needed to be inclusive to the elderly, children and those with disabilities, including Braille signage for visually impaired passengers. If we are to adapt to rising temperatures

across the world, we need to change the way we build shelters, public spaces, and our homes everywhere.

UN YT Clip: Rising temperatures are leading to more heat waves and droughts, which impacts the soil and can damage foundations and building materials. Extended periods of heat also increase the likelihood of fire, posing a risk to people and their homes. To adapt, we can position buildings to capture the winds.

Outer walls can be strategically built to channel cooling breezes indoors. Crucially, nature offers additional solutions. Plants can be grown around a building to provide shade. Reducing indoor temperatures and making interior spaces more[00:04:00] comfortable.

Ntombini Marrengane: Welcome to season four of the Just For a Change podcast, powered by the Bertha Center for Social Innovation and Entrepreneurship. I'm your host, Ntombini Marrengane.

In this new season, we're looking at unexpected connections, surprising overlaps, and unusual alignments in the work being done locally and globally that's moving our societies forward in positive ways. And just a reminder that the view shared by our guests may not necessarily reflect the views of the Bertha Centre.

In South Africa, if you say public transport, what probably comes to mind is an image of a minibus taxi. Taxis carried 65 percent of the 2.5 billion annual passenger trips. In the urban environment in 2023, according to SANTACO, the principal representative body of the taxi industry in South

Africa, mini buses are the backbone of the public transport system, particularly [00:05:00] in townships and informal settlements, making them a charged cultural symbol.

The taxi represents resilience, opportunity, and the country's vibrant informal economy, but also a certain element of danger. Later on, I'll be speaking to Dr. Thandi Kapwata from the South African Medical Research Council about a project on heat perceptions and heat health risks at taxi rings in the City of Tshwane in South Africa.

But first, let's hear from Gillian Vedan, senior project manager in the Bertha Center's health financing team about how innovation is needed to combat the health risks of climate change.

Gillian Vedan: Innovations that are needed to help us adjust to our changing climate and related health risks are interconnected.

We recently worked on a report for the World Economic Forum's Global Alliance for Social Entrepreneurship, which looked at the complex interplay between health, sustainable agriculture and climate change. What we found through data analysis and [00:06:00] interviews with actors across the social innovation ecosystem was that working in these areas requires nuanced systems thinking.

So, although an innovator may be working in a clinical setting, the fact that patients face food insecurity at home has repercussions on their health outcomes. Women are the main decision makers when it comes to meals

at home, but if food options are limited or expensive, then difficult trade offs are made.

In areas that are susceptible to extreme weather events, the quality of soil is threatened. There are disease vectors that thrive under the new weather conditions, or farmers are reluctant to ensure their crops against climate risks. Many people also get displaced during climate disasters, which brings migrant help into the picture.

So, social innovations need to think broader and target vulnerable groups of people and rather than focus on one SDG alone, innovation should span across priority areas and sectors for [00:07:00] more impact.

Ntombini Marrengane: Gillian highlights how sectors need to work together to keep humans healthy. As we keep striving for sustainable solutions to climate change.

To share more on this topic, my guest for this episode is Dr. Thandi Kapwata. Dr. Kapwata is a specialist scientist in the Environment and Health Research Unit of the South African Medical Research Council. She holds a PhD from the University of Pretoria. Her research focuses on environmental risk factors affecting health in South Africa.

One of her main areas of interest relates to the health impacts of exposure to high temperatures and heat waves, particularly in rural and vulnerable communities. Thank you so much for joining me today, Dr. Kapwata. It's a privilege to have you here with us.

Dr Thandi Kapwata: Hi, Ntombini. Thank you so much for inviting me.

Ntombini Marrengane: Dr. Kapwata, you're involved in a project that gathers information from taxi commuters and the taxi industry in the City of [00:08:00] Tshwane to inform interventions that will curb heat health risks and improve thermal comfort. It's funded by the National Research Foundation and relies on collaboration with the City of Tshwane and the Tshwane taxi industry.

Please tell me more about how this project came about.

Dr Thandi Kapwata: So, um, we here at the Environment and Health Research Unit of the Medical Research Council, um, are really interested in trying to understand the health impacts of climate change on people. And that is because we really believe that once we understand the impacts, we can then look into ways to reduce these impacts and to protect the public as a whole against climate change.

Um, one of the things we are focused on in particular is heat. I'm sure you'll have noticed as well that recently we're experiencing a higher number of heat waves that are more intense and that are lasting for longer periods. And so we thought that, um, one of the most vulnerable parts of the [00:09:00] population are actually taxi commuters, um, because lots of people use public transport, um, in our country.

And so we thought it would be very important to understand the kinds of, um, health risks they face because of, of extreme heat and just to work with the taxi industry and the commuters and the drivers to try and come up with, um, with interventions that we could trial that might offer some sort of protection from, from extreme heat.

Ntombini Marrengane: How long will the project run and what will happen once it's complete?

Dr Thandi Kapwata: So the project is a three year project and we are now in year two. Um, so the first year was just, uh, basically about engaging with the taxi association and the City of Tshwane. We also went to the taxi ranks and we engaged with commuters just to understand also, um, the experiences of heat in, inside taxis as well as in the taxi ranks.

We also engaged, um, at, at several meetings with all [00:10:00] of these groups um, and so we had a phase one of the study where we also measured temperatures inside the taxis. And then we are going to now be starting on a more consultative process of coming up with actual interventions that we can, we can put into place.

Ntombini Marrengane: What was the reaction of the taxi industry when you first approached them with this project?

Dr Thandi Kapwata: I must say it was very, it was a very positive experience, you know, um, they were very welcoming um, they were very keen to engage with us um, we've been meeting with them on several occasions. We feedback to them after every data collection or whichever surveys we do, and they've been very keen to be involved uh, very receptive.

We are working well together in terms of, you know, trying to come up with ways that work for them as well, because they are the key stakeholders in this, you know, so whatever interventions we come up with have [00:11:00]

to be developed, um, jointly and, and, and they've been very, uh, forthcoming and involved in that.

Ntombini Marrengane: Was this problem of heat health risk something that they had also identified?

Dr Thandi Kapwata: Yes, actually. So when we were talking to the taxi owners and the taxi drivers, one of the things they also indicated was that the quantum taxis the engine sits under the driver's seat, and that's not something they can do anything about, and they understand that it makes the taxi as a whole hotter, in addition to the outside heat, you know.

So they were also saying that this is something that they've also been thinking about, also in terms of like the design of taxi ranks, they also raised concerns about that as well, you know, that they were also thinking about. You know, if there were things that could be done to reduce the heat in terms of like changing the structure or the design of, of taxi ranks as well.

Ntombini Marrengane: Please explain to our listeners what thermal comfort means and what [00:12:00] heat health risks are.

Dr Thandi Kapwata: So thermal comfort just means that it's the way that your body feels under certain temperatures. So, for instance, if it is a hot day, then you have, uh, reduced thermal comfort because you are, you are hotter, uh, you're, you're feeling more uncomfortable.

Your body's experiencing all of these symptoms that are related to heat, and so that leads to a lower thermal comfort. So, thermal comfort is basically your body's reaction to, to temperature or heat.

Ntombini Marrengane: And heat health risks?

Dr Thandi Kapwata: So, when we talk about heat health risks, we mean the impact that heat is having on your body.

So, for instance, when it's really hot, people tend to feel dizzy. You tend to feel more fatigued, you might experience dehydration. In extreme cases, for maybe people that work outdoors, you might even experience heat stroke. So those are all health risks of, [00:13:00] of heat.

Ntombini Marrengane: And who is most vulnerable to these heat risks?

Dr Thandi Kapwata: The population as a whole is vulnerable, but there are specific groups that we are more concerned about, um, in terms of their ability to, to regulate their body temperature. In particular, it would be children, especially, uh, children under the age of five and also the elderly. They, they tend to, to struggle a lot more, um, with extreme heat.

Ntombini Marrengane: The World Resources Institute research shows that in the Global South, women depend on public transport more than men, make more connected trips, and are more likely to travel with children or the elderly. Does your research reflect this trend too?

Dr Thandi Kapwata: So we have not actually gathered that data, but I mean, just from working in the taxi ranks and, you know, from conducting our, our surveys around the taxi ranks, we, we did notice that as well, a number of children, like you're saying, women travelling with, [00:14:00] with children. So I, I would definitely agree with that statement.

Ntombini Marrengane: What kind of interventions are you looking at to help improve things for taxi users and drivers in Tshwane?

Dr Thandi Kapwata: So there are a number of options that we are working through. The first one was a reflective painting on the shelters of, of taxi ranks, so this has been done in a number of countries and there have also been some trials here as well.

Um, where you paint the shelter with a reflective paint or reflective coating and that tends to reflect a lot more of the sun's rays, keeping the space underneath the shelter cooler, so that is the one intervention. The other is obviously we were talking together with the, the City of Tshwane and the Taxi Association about maybe more taps.

Obviously when it's hot, one of the main things that we advise is people should stay hydrated and to stay hydrated, you need water. And we noticed that this isn't easily available at most taxi [00:15:00] ranks and so we were in discussions about how we can work around this, making water more readily available to, to people in and around a taxi ranks.

Ntombini Marrengane: Are there any interventions which, um, require a change in behaviour by either the taxi commuters or the drivers themselves?

Dr Thandi Kapwata: Yes, so that is actually one of our other outputs. So, um, one of the main things that we're interested in is raising awareness and educating people about changes in behaviour and about understanding the risks of heat.

So we distributed heat awareness materials to commuters and to taxi drivers, um, we also distributed posters to be put around in the taxi ranks. We also made, uh, little stickers as well to, to put um in or outside the taxis just to explain to people about things that they should, that they could do, um, when it's extremely hard, like drink more water, stand under the shade for as long as possible when [00:16:00] you're waiting.

Just those sorts of small behavioural changes that, that could be of, of, of a great help.

Ntombini Marrengane: And what is needed to make some of the interventions that you suggested earlier happen?

Dr Thandi Kapwata: So I think it's just a lot of working together with different stakeholders, I think that's the primary thing. And I think just our engagements with all of these stakeholders at the City of Tshwane and the Taxi Association and us as researchers as well.

I think just working together is key, is key to this, and so I think that the next phase would just be for us to come up with, with more practical timelines and, you know, just, just ways of, of implementing this in stages so that it, it lasts long term. So that, you know, we are sure that whatever we implement will be a long term solution and will actually improve the lives of people.

Ntombini Marrengane: What are some of the challenges you've had around this kind of project? Are there preconceptions [00:17:00] that you've had to tackle?

Dr Thandi Kapwata: Yes, so, you know, the main thing that we, we have come across was that the taxi industry was concerned about the provision of water at taxi ranks, because one of the main concerns was that that would lead to maybe an increase in the number of homeless people in and around the taxi ranks, maybe trying to use the water for bathing or for other purposes.

Um, also maybe people just trying to get water for domestic purposes and that would lead to maybe the ranks being busier than they would be if it was just the commuters and the taxi, the taxi drivers being in the rank. We had also suggested maybe increasing the green spaces around taxi ranks because obviously the greener the space, the cooler the area.

Um, and one of the concerns there was about safety, that, you know, once you increase the green space where you have more trees, that might [00:18:00] mean there's more space for people to hide in the bushes and that sort of stuff. So that would impact the safety of people within the taxi rank um, so those are the challenges that we, we have come across so far.

Ntombini Marrengane: Has there been one big issue that you've struggled to get support on?

Dr Thandi Kapwata: Not so far. I wouldn't say so. So like I said earlier that we are working through, through things together, you know, so we are working toward a solution that incorporates the views of all parties and that takes into account the views of all parties.

And so, so far we haven't had any major, major issues.

Ntombini Marrengane: It sounds like the project relies heavily on collaboration at a large scale. How is this community effort helping you and your team to understand the issues at play?

Dr Thandi Kapwata: So, um, this was a huge learning curve for us, you know, because when you, when you do work like this, you're, you are forced to see things from, [00:19:00] different perspectives.

And that's been really interesting, as researchers, we don't just see things from a point of view of where we have to just gather data. And we're also understanding people's lived experiences. We're also understanding how the heat impacts them, not from a theoretical, but from a practical perspective and so that's been really eye opening for us just to understand on the ground, what all of this means to people, the issue of climate change and extreme heat. It's, it's very important.

Ntombini Marrengane: And what have been some of your, your findings perhaps that you didn't expect with regards to the feedback from the community?

Dr Thandi Kapwata: You know, it was just interesting when, you know, we're asking people about the kinds of things they would like to see in, in terms of interventions because we also spoke to commuters and they had some very interesting ideas.

So one of the things that came across from many people, and it was mostly the younger people, was that they would like to have maybe an app on [00:20:00] their phone that could, you know, warn them about, um, things.

There was a possibility of heat waves or extreme heat, um, and then just ways for them to prevent the exposure.

You know, after seeing that, we then began to consider that more, you know, and we're also thinking more about that of maybe, um, having QR codes around the rank. People can scan the QR code and then they would receive information about the temperature that day and if there are any heat warnings, um, in that area for that day and any behavioural interventions that they can. They can do to, to, to protect themselves against the heat.

Ntombini Marrengane: What are some unexpected connections you've been seeing in this work?

Dr Thandi Kapwata: I think it was, it's just the diversity of people that you, you, you come across. Um, that's been really interesting, you know, obviously in a taxi rank, you meet people from all walks of life, uh, people doing different sorts of things, but it was just really interesting to engage people, um, on that level, just to talk to [00:21:00] people from, from all over.

It was very interesting.

Ntombini Marrengane: And even with these different perspectives, you did you find commonality?

Dr Thandi Kapwata: Yes. So I think, I mean, the, the binding thing here is that everyone is affected by heat and people generally all experience the same symptoms. We're getting the same feedback about the issues they're having with the heat in the taxis and in the taxi ranks.

And you know, this seemed to be a cross cutting issue. So it's, it's a very, um, wide ranging concern.

Ntombini Marrengane: What is something you see in your work that has a direct impact on health and is the result of climate change that you think would surprise our listeners?

Dr Thandi Kapwata: Um, so one of the things we're seeing is that, um, climate change is affecting, so it's, it's not just the immediate impact on health.

It's also affecting underlying conditions, so for instance, um, people who are maybe hypertensive, [00:22:00] when it's hotter, they tend to have more severe reaction to the heat. And people with respiratory issues as well, that would mean like, you know, asthma and those sorts of things. They also tend to be more sensitive to, to extreme heat.

And I think that's something that's really important for people to note.

Ntombini Marrengane: Can you share some of the changes you've noticed in climate change research between when you started versus now?

Dr Thandi Kapwata: So when I first started in this field of research, there was very little evidence on the health impacts of heat in Africa.

And over the years, this has been changing. There is much more research coming out of Africa. Looking at the direct impacts of climate change, in particular, heat on health, public health as a whole. And I think that is because of the fact that people are understanding the, the growing urgency,

um, and the fact that the, the impacts of climate change are becoming more [00:23:00] apparent, more severe, and more long lasting.

So there has been a shift towards more research being done, in this area.

Ntombini Marrengane: And how does climate justice fit into the research agenda?

Dr Thandi Kapwata: That is a very important question Ntombini. Uh, so I think the main thing to consider here is that the countries that contribute the least to climate change feel the impacts, the direct impacts of climate change the most.

So in our work, we try to focus on, uh, vulnerable populations or people who feel the impacts of climate change the most. Um, and so we try to advocate, um, on their behalf so that their voice is also heard because it's important that we consider, um, everyone's voice in this, otherwise we won't be working towards a common solution.

Ntombini Marrengane: And I think particularly in the example that we've discussed today of the needs of taxi commuters [00:24:00] and taxi drivers, um, that's a form of mass transit and yet they are suffering the most rather than people who are driving in private cars.

Dr Thandi Kapwata: Yes, yes, for sure. So, um, more than 80 percent of, uh, of people in Africa use public transport.

Um, you know, and, and as you will notice in South Africa as well, um, we have more than 60 percent of our population who rely on public transport.

That is a massive amount of people who have no other option, but to use this means of moving around for their daily lives, their livelihoods um, to get to school, you know, all those sorts of things.

And so this shows that a large number of our population is exposed to, to extreme heat through the public transport system.

Ntombini Marrengane: That's a really important insight to understand that the people who are in the majority uses of public transport are actually [00:25:00] not necessarily the producers of the emissions that cause climate change.

Dr Thandi Kapwata: Yes.

Ntombini Marrengane: For all of our guests this season, we're asking them two questions. So my first is, why do you do the work that you do and what makes you hopeful?

Dr Thandi Kapwata: I do the work that I do because I am passionate about public health. And one of the things I believe is that research alone won't make the change, but we have to implement action.

That is what will make the change and so that is what I believe our work is doing. We are not just providing evidence, um, about research, but we are also looking at ways to change things, um, on the ground.

Ntombini Marrengane: And what makes you hopeful?

Dr Thandi Kapwata: What makes me hopeful is seeing the number of young people that are entering the climate and health research space.

I've been at a number of conferences lately, um, a number of engagements and just to see the enthusiasm from young people and [00:26:00] the number of young people entering this field gives me hope that, um, you know, we are working towards a common goal. Um, and just given the fact that climate change is with us, you know, for a while, and we all have to do things to better our lives at this point in time, it's just so inspiring that, you know, there are so many people coming together to work towards solutions that will improve our future collectively.

Ntombini Marrengane: I think young people certainly see the more immediate pressure of climate change than people of other generations. And amongst them, it makes sense that you found champions for this kind of work. What does social innovation mean to you?

Dr Thandi Kapwata: Social innovation for me would mean getting the buy-in of communities, engaging with communities, engaging, um, with different stakeholders, just for a more interdisciplinary approach to public health. That for me is. [00:27:00] would be key.

Ntombini Marrengane: Thank you so much, Dr. Kapwata, for sharing your research and insights with us. While taxi ranks have always been a space for resilience and adaptability, we can hear it's time to rethink these public spaces to improve them for everyone. Thank you so much for joining us.

Dr Thandi Kapwata: Thank you so much, Ntombini. It was good to speak to you.

Ntombini Marrengane: In this episode, we've heard powerful examples of how social justice and innovation can go hand in hand, and that involving local communities who know their own needs is the best way to find the solutions. But these projects are just the beginning. Similar changes are needed around the world, especially in developing countries where rising temperatures will impact those who rely on public transport the most.

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