

Podcast - How to Hochschule



Show transcript

Episode 7 - How to be Sustainable

00:00:00: Hari: Welcome to How to Hochschule: our audio guide about tackling life and work at Rhine-Waal University of Applied Sciences, one of the most international universities in Germany. So grab a cup of hot macha tea, put on your comfiest headphones, and join us as we explore the world of Hochschule Rhein-Waal

00:00:30: Stephan Hanf: Hari, the last time we heard from you, it was about, uh, relearning German actually, and you are back with your new, very

00:00:40: Stephan Hanf: own episode.

00:00:41: Hari: Yep. I'm the, I'm the host now. No longer just a Yeah. Co-host I guess.

00:00:47: Stephan Hanf: Kind of, yeah.

00:00:48: Stephan Hanf: So, um, what's quite interesting, the topic you choose, how did you come up with a topic about sustainability?

00:00:57: Hari: Um, well, I've been hearing the word sustainability for years now, and it has turned into a very, very big issue on, on many levels in society. For example, recently we went to an event that was held in university called the Akademische Jahresfeier.

00:01:17: Stephan Hanf: Yes. If you translate it,

00:01:19: Stephan Hanf: it's something like a celebration of the University of Applied Sciences.

00:01:24: Stephan Hanf: It runs every year. There was a break in between Corona and now, but that's more or

00:01:29: Stephan Hanf: less

00:01:29: Stephan Hanf: how I would

00:01:30: Stephan Hanf: translate it.

00:01:31: Hari: Yeah, yeah. And it was a, it was a pretty long event that went into the night and it sort of recognized the work that was done by the students and professors of, um, this university. Some professors won awards, some students won awards for their work and contributions.

00:01:48: Hari: And, um, right before that happened, there was a poster presentation on the, on the second floor of the Audimax where students and professors were showcasing their research, um, and talking to whomever about their research. And almost all of them had something to do with sustainability. And towards the end, there was a politician who gave a speech about sustainability.

00:02:14: Stephan Hanf: Right. It's,

00:02:15: Stephan Hanf: uh, actually it was the Minister of Agriculture in the state of Nordrhein Westfalen, Silke Gorißen.

00:02:22: Hari: The, the speech was in German.

00:02:23: Hari: And, uh, since my episode about how to learn German, my German has not improved that much that I understood everything she was saying. But I definitely heard the word "Nachhaltigkeit" used a lot, which is the German word for sustainability.

00:02:35: Hari: As a science communication student, I've also had modules about sustainability and, um, clearly it was a very important topic for me and I saw the podcast as a great medium to talk to, to reach more students about this, um, about this topic. And also to share with them about the research that they could very well be a part of in this university with sustainability as its goal.

00:02:58: Stephan Hanf: Hari, that's a

00:02:59: Stephan Hanf: very special episode for

00:03:01: Stephan Hanf: many reasons. One of the main reasons, of course, you are the host this time around,

00:03:06: Stephan Hanf: but also the second reason we got something very special for our listeners.

00:03:10: Hari: Yeah, so, um, we actually want to find out if our listeners are learning something from the content that we put out, and that's why this episode comes with a quick survey.

00:03:20: Hari: So for everyone who's part of the HSRW family, if you check your university inbox, you'll find a link to the survey and you can also find the link on our show notes on our website.

00:03:31: Stephan Hanf: So I should

00:03:32: Stephan Hanf: only do the survey

00:03:33: Stephan Hanf: before listening to the episode, like right now?

00:03:37: Hari: Um, well, as I mention in the inbox, um, you'll actually find two links: one, which you should fill out before listening to the episode,

00:03:44: Hari: and the second one you should fill out after listening to the episode. So this way we can really see if the episode has taught you something. Sustainability itself is a, is a, is a social goal. There are many definitions, different people have their own versions of it, but the idea of sustainability is to have a world

00:04:01: Hari: where our species can go on living for as long as possible with all the resources that we need. That's the overarching goal of sustainability. The United Nations has laid down 17 Sustainable Development Goals and, um, if you would go to the offices of, um, some of the professors and staff who are at the higher positions of the research projects, you will see many posters of the Sustainable Development Goals stuck all over the wall.

00:04:29: Hari: If you would check out the United Nations website, you'll find some pretty harrowing, um, statistics about, about the Sustainable Development Goals. I mean, I, I have some on hand, which I could just read out for context.

00:04:42: Stephan Hanf: Yeah. Give us some context.

00:04:44: Hari: I'll give you some context. So, um, there is a sustainable Development Goal number two, which is end hunger, achieve food security, and improve nutrition and promote sustainable agriculture.

00:04:55: Hari: And, uh, on this page, on the United Nations website of Sustainable Development Goals, you can see some statistics such as 149.2 million children under the age of five are stunted. They're not growing properly. One in 10 people all over the world are suffering from hunger. Right? And if you look at, um, Sustainable Development Goal number six, which is to ensure availability and sustainable management of water and sanitation for all, about 3 billion people in the world, um, have access to water of equality that we don't know about because there's not enough monitoring.

00:05:32: Hari: And of course, there is the big, big conversations that we hear about a lot, which is climate change and renewable energy and, uh, Sustainable Development goal seven, which is ensure access to affordable, reliable, sustainable and modern energy for all, that says that although our energy, uh, our usage of renewable energy has increased over the years, right now, renewable energy still make up

00:05:53: Hari: 17.7% of all energy that's being used. And, uh, this is something that we also explored with the series of interviews that I carried out, uh, to produce this episode.

00:06:05: Stephan Hanf: So, Hari, before we jump into it, how did you actually approach this topic?

00:06:10: Hari: Well, I decided to get in touch with professors of this university who are also involved in some way with research. To be more specific research in the area of sustainability.

00:06:27: Hari: Lesson number one: sustainability starts with a mindset.

00:06:31: Stephan Hanf: So where did you start?

00:06:32: Hari: Well, I started pretty high up. I went directly to the vice president of one of the vice presidents of this university.

00:06:40: Prof. Dr.-Ing. Peter Kisters: Okay. My name is Peter

00:06:41: Prof. Dr.-Ing. Peter Kisters: Kisters. At the moment, I'm the vice president at this university for research innovation and, um, knowledge transfer.

00:06:48: Prof. Dr.-Ing. Peter Kisters: I'm responsible for, on the one hand, for the support of, uh, the research activities in the university as well as the transfer activities.

00:06:58: Hari: Yeah. Could you elaborate a little bit on what you mean by transfer?

00:07:00: Prof. Dr.-Ing. Peter Kisters: Transfer is, um, if, if our scientists work on a certain topic that in most of the cases, um, it's, it's a bit tricky to get this, the, the knowledge they gain or the results out of the university.

00:07:15: Prof. Dr.-Ing. Peter Kisters: Sometimes they are in contact to companies and, uh, and there is a direct, uh, transfer of knowledge, but sometimes times it's, uh, something that is more important for society, for example, or for a certain branch of, uh, different companies in the end. And then we come into play because, uh, our job is to do exactly this step out of the university, to, to communicate what the university's able to do to communicate, uh, results of, uh, research projects, um, to communicate, um, yeah, let's say investigations or analysis results, uh, that have been done, for example, in the Faculty of Society and Economics, you know, so where some people in the society itself are our, let's say, um, uh, the people that are interesting to, to talk to, to, uh, let's say, to transfer the knowledge to, so that they have an, an effect on, on their side, uh, so that they can benefit

00:08:13: Prof. Dr.-Ing. Peter Kisters: from it.

00:08:14: Hari: And,

00:08:15: Hari: um, he's also the one who is in charge of this new big project that the university is starting out, which should go on until 2027 called TransRegINT.

00:08:27: Stephan Hanf: Now you

00:08:27: Stephan Hanf: can show me your

00:08:29: Stephan Hanf: new found German skills.

00:08:30: Stephan Hanf: What does it stand for?

00:08:32: Hari: Yep. Well, it stands for Transformation der Region Niederrhein, Innovation, Nachhaltigkeit, Teilhabe.

00:08:40: Stephan Hanf: Very good.

00:08:41: Hari: And in English that would be transformation of the Lower Rhine region, which is where we are right now, innovation, sustainability, and participation.

00:08:51: Prof. Dr.-Ing. Peter Kisters: How did it start? So we, we decided to, uh, develop some, um, some communities in the university that focus on a certain kind of research. Uh, so we call it Forschungsschwerpunkt, um, profile in the end, a research profile.

00:09:07: Prof. Dr.-Ing. Peter Kisters: Um, And, uh, this, uh, during that, uh, that process, we had some pitches, uh, from, from our scientists, from Kamp-Lintfort, from Cleves and so on. And one of them that was Professor Becker, he said, we have to stay (stand) for something. Yeah. It's not enough just to do science. Uh, we have to stand for something. Um, and that was, uh, the starting point of TransRegINT, uh, because this was, uh, what all of us realized is necessary.

00:09:41: Prof. Dr.-Ing. Peter Kisters: We have to get profile for the university, we have to stand for something the people understand, the people outside the university understand. Um, and this is sustainability in the end. Uh, and we as a uni university, we are young, we have quite a lot of young, uh, colleagues, uh, professors, scientific stuff and so on.

00:10:04: Prof. Dr.-Ing. Peter Kisters: Um, and all of them have an idea of what sustainability will be or is.

00:10:09: Hari: And um, according to Professor Kisters, he said that, um, the mindset that drives all these research projects under the TransRegINT, um, umbrella is, um, the mindset that says we are responsible for the future.

00:10:24: Prof. Dr.-Ing. Peter Kisters: And it was quite, quite interesting to see how this, uh, let's say sentence, we have to stand for something,

00:10:33: Prof. Dr.-Ing. Peter Kisters: we have to be responsible or we are responsible for the future somehow, um, Changed their minds and they started to think about sustainability much more than before. We then decided, okay, we need kind of a, a nucleus, uh, for, for exactly that. We need a kind of a project. And, um, that was start point of TransRegINT.

00:10:56: Prof. Dr.-Ing. Peter Kisters: And then we started to develop this project, um, and decided to have some, some, uh, labs that are, uh, open for society, that we are going to do citizen science, that we would like to do, um, um, study programs that integrate, um, research and transfer into teaching. Um, and all that is part of TransRegINT nowadays.

00:11:20: Prof. Dr.-Ing. Peter Kisters: Uh, all that is what we are starting with right now. And I hope in, in four and a half years, five years, we, we have reached a point where sustainability is something that all of us see as a kind of a unique selling point of the university.

00:11:39: Hari: And could you explain about, um, what sustainability means?

00:11:43: Prof. Dr.-Ing. Peter Kisters: From my point of view, it is quite simple.

00:11:46: Prof. Dr.-Ing. Peter Kisters: If we, if we don't use more than what will be produced, uh, during the time of use, then it is sustainable. Yeah. I don't want to go deeper. Yeah. Because that you will never be right. Yeah. Because there are so many different, uh, definitions from different, different perspectives, but we all have a kind of a feeling what sustainability is.

00:12:10: Prof. Dr.-Ing. Peter Kisters: Sustainability is certainly not if, uh, somebody puts a green label on his, on his product. Now that's not, that's greenwashing clear. Yeah. So we need solutions for the future that reduce CO2 uh, um, emissions that, uh, that enable us to, let's say, produce, uh, products with different materials that are sustainable again, and these, uh, materials replace the conventional materials such as steel or whatever, or plastics.

00:12:40: Prof. Dr.-Ing. Peter Kisters: We need biocompatible, um, plastics. All that is sustainable now so if we can say, okay, what we use can grow during the, um, period of using. From cradle to cradle is another argument, uh, that you can find in, in this, uh, field where there is quite a lot about building a house. Uh, and what do we do with this house afterwards?

00:13:03: Prof. Dr.-Ing. Peter Kisters: Uh, can it be, can the materials be used for something next? Uh, and step by step, you use materials not only for one purpose, but for many

purposes, uh, during its, its lifetime. In the end, if you're talking about wood, you can use wood for 200, 300 years if you want. Uh, and that's the time that is needed for a tree to grow again, uh, to, to be a big, uh, tree in the end.

00:13:27: Prof. Dr.-Ing. Peter Kisters: Um, and this is my, my understanding of sustainability. So, for example, coal needs millions of years, but we use it in a few hundreds, hundreds of years. That's not sustainable for, for

00:13:40: Prof. Dr.-Ing. Peter Kisters: sure not.

00:13:40: Hari: Yeah. And then we talked about like some sustainable sustainability problems in this region. He gave, um, hypothetical solutions that are not

00:13:47: Hari: uh, implemented yet. For example, milk production is a big thing in this area. This big idea that keeps coming up when I was talking to him and also the other professors, is closing

00:13:56: Hari: loops.

00:13:57: Prof. Dr.-Ing. Peter Kisters: There is a big agricultural industry in this, uh, in this region. And, um, if you, if you have a look at this, um, and you look at the production of, of, um, milk, for example.

00:14:11: Prof. Dr.-Ing. Peter Kisters: Yeah. Then we have hundreds of cows here producing milk, but the milk will be transported to Cologne, to Düsseldorf to, I don't know, Hamburg, Munich, whatever. Yeah. Or to China if it is milk powder. Um, what remains here is, um, all the rest. Yeah. It's only the milk that goes away. So we have no closed circles. Mm-hmm.

00:14:34: Prof. Dr.-Ing. Peter Kisters: Uh, the waste products stay here and, uh, they contaminate the ground, the soil. Under normal conditions, uh, part of the, uh, each, each box or each, um, bag, milk bag, uh, needs a little bit of waste product on it to be transported so that the, the, the circles are closed again. Perhaps somebody in Cologne can use it to, for their plants.

00:14:59: Prof. Dr.-Ing. Peter Kisters: That would be a totally different, uh, loop that we finally get a totally different close cycle, but we don't have it at the moment. Means all the waste products stay here, and as soon as we look at this, you have to convince people that other systems are, let's say, helpful to or are, are necessary. To design the future.

00:15:22: Prof. Dr.-Ing. Peter Kisters: Um, and as soon as we talk about people, we are not only talking about the people on the street, um, the people that buy milk and so on, but also the farmers who have to change their systems as well. And this is a process that cannot be done within a few days or years. That's a long process because they build, build up, um, systems that are quite expensive and they invested in it.

00:15:50: Prof. Dr.-Ing. Peter Kisters: Yeah. Hence they can't stop with it right now. So we need solutions, ramp down the old system, ramp up the new system. That is what we finally need. Um, and this can only be achieved, this can only be successful if we have a situation where, the customers understand this, uh, this process. Again, it's transfer in the end.

00:16:11: Prof. Dr.-Ing. Peter Kisters: Yeah. Transfer of knowledge from the university into the region. And if we can provide some solutions for the farmers because they want to earn money, not only now, but also in 10 or 20 years, and it requires communication to finally be able to explain what is behind, uh, and to explain why it is necessary to these, to do these steps.

00:16:34: Prof. Dr.-Ing. Peter Kisters: Because in most of the cases, I don't believe that we will be, uh, able to, to come to solutions without reducing our consumption. Yeah. So less is more in future. And this is another aspect that we have to keep in mind as soon as we talk about, uh, transformation processes. We have to explain much more because then it is not obvious what is, what is greenwashing, what is not greenwashing.

00:17:00: Prof. Dr.-Ing. Peter Kisters: Um, it is not obvious where this information comes from. So it is also, um, Kind of data literacy that comes into play. Yeah. Um, if somebody tells you this is good for the future, is it right or is it wrong? Yeah. Who tells you if it is right or if it is wrong? What is fake and what is, what is real? Um, and as soon as we talk about, um, knowledge transfer and, um, transfer into the society, for example, we as a university, um, are able to handle information and we can differentiate in between fake and real.

00:17:38: Prof. Dr.-Ing. Peter Kisters: And we, we look at facts, we look at data. Hence we have an, an idea of what is good and what is bad information. And this is our obligation to, to, uh, let's say communicate what is, what is good information and what is, um, let's say information that helps us to, to do the next steps.

00:17:59: Hari: So

00:17:59: Hari: the idea of TransRegINT is to make research transparent, to involve citizens

00:18:06: Hari: um, In the terms of getting their input for research, because they are the end users of the research that's gonna be done in this, in this university. So to have labs that are open to them to come and share their insights.

00:18:18: Prof. Dr.-Ing. Peter Kisters: Uh,

00:18:19: Prof. Dr.-Ing. Peter Kisters: we have these hubs. Uh, one for interaction. Interaction means, uh, when we do science or when we do, uh, investigations, we don't want to do it alone anymore.

00:18:29: Prof. Dr.-Ing. Peter Kisters: Uh, we would like to invite people to, to do it together with with us. And we would like to open, um, the doors of the university, not not the real doors, but, um, have more transparency in what we do. Yeah. Have more options for people from outside the university to work together with us. And this is part of the interaction hub, uh, in the, in, in the transformation hub, which is the one in, in the middle, which is from my point of view, the, the most important one if it comes to, um, to convincing people that we need some other solutions.

00:19:05: Prof. Dr.-Ing. Peter Kisters: Um, This hub is filled with real labs. Yeah. So labs where people can go to and see what is going on. Uh, if we're talking about, um, uh, agriculture for example, again, then we will have uh, uh, Agroforst real labs means a combination of producing plants or vegetables, for example, on the one of fruits on the one hand, and having trees in it as well.

00:19:34: Prof. Dr.-Ing. Peter Kisters: This is, uh, a system that is well known, but we forgot to use it. Uh, so this is 400, 500 years old and uh, and at that time it was quite common to have a combination of fruit and vegetable production and wood production, which is, uh, forest in the end. Um, And, um, this is what we would like to, um, show once again, uh, so that people can go there, can see what's going on.

00:20:02: Prof. Dr.-Ing. Peter Kisters: Uh, at the same time, these labs are required to investigate how the behavior or how the, how the conditions in such an, uh, Agroforst will be. Yeah. So how is the impact on the moisture in the ground, for example, uh, which plants are those that are suitable for such a system? Uh, which of them are not suitable?

00:20:22: Prof. Dr.-Ing. Peter Kisters: Um, all that has to be, uh, investigated in this field. And, um, our task is to have something that is open for the society Yeah. So that people can go there and see what is going on. Yeah. So it does not mean that you have to study something. Uh, you can also work in a, in a project without being, uh, being an academic.

00:20:45: Prof. Dr.-Ing. Peter Kisters: Um, you can go there and I. Uh, add your point of view, your perspective to a scientific project, for example, and that makes it worth more than it is if it is only science. Uh, because at that time it's, it's, um, it's not only science, but it's science that has been, let's say, evaluated by citizens. What you see with your own eyes, what you, what you can touch is, uh, you trust in that much more than in other

00:21:15: Prof. Dr.-Ing. Peter Kisters: things.

00:21:16: Hari: For a student like me, near the, near the end of my studies, so I'll be out of here before TransRegINT has flourished in it's, all it's glory, but what could I do to contribute to a more sustainable world? Sounds like a very generic question, but that's a, it's a good takeaway question.

00:21:36: Prof. Dr.-Ing. Peter Kisters: Let's, let's do it the other way around.

00:21:38: Prof. Dr.-Ing. Peter Kisters: Let's look at me. Yeah. Um, um, I can have a look at my grandparents. They lived differently, um, but much more sustainable than I did. They had a much smaller world all around them. They never flew into, into holidays or things like that. And the question is, does it really satisfies you if you, if you do these things we can do right now, but we do, um, without thinking about the consequences for, for the nature, for, for our world in the end?

00:22:16: Prof. Dr.-Ing. Peter Kisters: And I think what is most important is to reflect your decisions. Um, it's not that I would like to give you, um, recommendation. Okay, do this and do that. There are quite a lot of, uh, quite a lot of different options to do something. But again, it's an, an individual questions a question. What is, what is good for you and what is good for me?

00:22:42: Prof. Dr.-Ing. Peter Kisters: I don't know if you eat, uh, um, if you are , uh, vegetarian or not. Yeah. Um, hence you like meat. Mm-hmm. Yeah. I do the same and I don't want to, uh, reduce it to zero, but I reduce it to, let's say 50 40% of what I did before. And I think for all of us, there are options to, to keep an eye on sustainability.

00:23:07: Prof. Dr.-Ing. Peter Kisters: Clothes are another, um, topic. Yeah. Where should they come from? Uh, what, um, is it, is it fair traded, uh, material or not? Yeah, so there are quite a lot of small aspects that we can do in our private lives, um, to finally be sustainable, um, in what we can, let's say influence the big changes, the transformative changes come from, um, require some, some guidelines, some politics, um, to, to do them.

00:23:39: Prof. Dr.-Ing. Peter Kisters: But all of us can do in our, in our, let's say, surrounding in the families and in the houses or whatever, we can reduce our consumption somehow. All of us have to do what we are willing to do and what we are able to do. What is most important is that people understand how does my behavior influence uh, our world Yeah.

00:24:04: Prof. Dr.-Ing. Peter Kisters: Or my surrounding or whatever. Yeah. And I have to start thinking about what are the consequences of my doing? And as soon as you do that, as soon as you start thinking about that, you become sustainable without any problem because

it's, uh, you come to points, uh, or to, to decisions that you have to do, which are, let's say, good or bad in terms of sustainability.

00:24:29: Prof. Dr.-Ing. Peter Kisters: And as soon as you think about it, you, you start thinking about, okay, I go for the good one. Uh, even if it costs me something. Yeah. Effort or whatever. Uh, and that's from my point of view, the first step into it,

00:24:48: Hari: Lesson number two: we can all get involved.

00:24:51: Stephan Hanf: Well,

00:24:51: Stephan Hanf: that's the pro project for the future.

00:24:53: Hari: Mm-hmm.

00:24:54: Stephan Hanf: But what

00:24:55: Stephan Hanf: about projects that are happening right now at the

00:24:56: Stephan Hanf: university?

00:24:57: Hari: Again, from TransRegINT one of the projects that they have is Agroforestry, and this has a significant overlap with another, um, research group in this university, which according to Professor Peter Kisters, they share the same goal.

00:25:10: Hari: So they're very much part of TransRegINT as well. And that is the Sustainable Food Systems Research Center, which, uh, has been established around two years ago. Everyone else that I spoke to for this episode has been a member of the Sustainable Food Systems Research Center. Um, because it's a cooperation,

00:25:29: Hari: it's a, it's a, it's a collaboration between, I think more than 20, um, professors and colleagues from every faculty of this university. So the first person I spoke to was, um, the main spokesperson of this, uh, project, which

00:25:43: Hari: is,

00:25:44: Prof. Dr. Dietrich Darr: My name is Dietrich Darr, I am professor of Agribusiness at Rhine-Waal University. I'm teaching mostly in the, uh, agribusiness and sustainable agriculture degree programs at the Faculty of Life Sciences.

00:25:55: Prof. Dr. Dietrich Darr: And in my research I work with mostly people and, uh, colleagues from developing countries in the global south on agribusiness, uh, forestry, sustainable resource management, um, how to, uh, contribute to bringing development to local communities, uh, through utilizing these resources and, uh, related topics.

00:26:19: Hari: So Professor Darr told me about the research group itself, how it works, it's, it's history, and, um, you are the head of the Sustainable Food Systems Research Center.

00:26:31: Prof. Dr. Dietrich Darr: I, I wouldn't call it the head, I'm the spokesperson at the moment. Yes, I was elected as being the representative, Uhhuh, uh, or the, the speaker of the center.

00:26:41: Prof. Dr. Dietrich Darr: Mm-hmm. Um, we consider ourselves being a network of 25 or so colleagues of the university originating from all four faculties, um, who do research, which is somehow related to how food is being produced, how natural resources are used for food production, how this food is converted into, uh, food products, how these are consumed, what are implications between or, or connections, uh, between the food sector and for example, the environment or the health sector.

00:27:20: Prof. Dr. Dietrich Darr: Um, how the production of non-food resources in the agricultural sector, uh, can contribute maybe also to, uh, creating new resource pools for a bioeconomy, for example. So all of these questions colleagues at our university work on, and we have joined forces in our research center in order to gain critical mass and visibility and, um, inspire each other, um, collaborate in projects, attract or, um, acquire these projects and funding for this work and,

00:27:55: Prof. Dr. Dietrich Darr: yeah.

00:27:55: Hari: And how old is this research center? What is its history?

00:27:59: Prof. Dr. Dietrich Darr: We have, um, established this research center, I think more or less two years ago. So the university, uh, leadership at some point, um, wanted to consolidate the ongoing research, which was quite fragmented because individual professors followed their individual

00:28:17: Prof. Dr. Dietrich Darr: topics or projects, uh, wanted to call, consolidate that into some overarching research themes after a, uh, long process of identifying topics that

colleagues work on at the different faculties and forming, uh, um, coalitions and, um, aggregating these many individual interest topics into overarching themes.

00:28:42: Prof. Dr. Dietrich Darr: And this sustainable food system theme emerged as one of the, of those themes, which I think was, um, attractive to a relatively large number um, of colleagues, uh, who can all relate to this overarching theme.

00:28:57: Hari: Yeah. Okay. Okay.

00:28:58: Hari: What is a sustainable food system?

00:29:02: Prof. Dr. Dietrich Darr: Um, a food system is the entirety of stakeholders and resources that are involved in food production, processing and consumption.

00:29:15: Prof. Dr. Dietrich Darr: Um, you would have the conventional or the, the traditional agricultural production system, you would have the whole value chain of agricultural products up to the consumers. Um, you would have all the service providers and enterprises that are involved in some way in this whole process, uh, logistics companies and um, banks and agricultural inputs, uh, providers and so on.

00:29:42: Prof. Dr. Dietrich Darr: But you would also look into, for example, the health implications of food consumption, as we know that, um, some type of food increases the risk for cardiovascular diseases, for example, and causes societal cost. Um, so the way of how we produce food has implications on many other, um, sectors of society. For example, the health, um, health system, for example, um, environmental costs that, um, affect quality of life.

00:30:12: Prof. Dr. Dietrich Darr: Um, all the trade relationships that, uh, come into play here as well. Um, we have got these geopolitical repercussions to take into account. Think of recent, uh, conflicts that we, uh, have observed. Um, we look into the interaction of the policy sphere and food production, uh, the common agricultural policies of relevancy in Europe, but similar, uh, policies exist elsewhere in the world.

00:30:40: Prof. Dr. Dietrich Darr: So how do they, um, promote, um, certain ways of food production? Uh, how can we use such instruments in order to steer the whole system more towards sustainability? These are some questions. Colleagues also look into questions related to, um, for example, labor conditions or the, um, um, seasonality of work in the agricultural sector in a region like ours in the Lower Rhine Valley, for example, where during the harvesting time or during the, the, uh, cultivation period, a lot of migrant workers are needed in order to help the system, help the sector actually do its work.

00:31:17: Prof. Dr. Dietrich Darr: So all of this is actually, and many other topics, I actually. Captured under this umbrella of the sustainable food systems. And the intention when we talk about sustainable food systems is actually to ensure all these processes in a way that, um, food security and, um, wellbeing of, uh, humans is insured, taking into account the environmental, um, conditions as well.

00:31:44: Prof. Dr. Dietrich Darr: Yeah. In order to reduce the amount of, um, damage that is currently created through the way of how we produce our food. Um, so it links the way of food production and the, um, food security and nutrition questions to sustainable development as well.

00:32:06: Hari: There are three main research areas under this research project, right.

00:32:09: Hari: So could you, could you tell me what, uh, the subthemes are and what they

00:32:12: Hari: mean?

00:32:12: Prof. Dr. Dietrich Darr: Yes. Um, we've, uh, started off, um, to define three sub-themes, which, however, are not carved in stone. I think they are, they will continuously de, um, develop and evolve as our research interests evolve and as maybe also the societal requirements change in the future.

00:32:31: Prof. Dr. Dietrich Darr: Yeah. So we have defined the three areas. One of them, uh, concerns the utilization of non-timber forest products or similar underutilized resources. Um, the second topic, uh, deals with agroforestry systems, and the third topic, uh, the contribution of insects for, um, human nutrition or animal nutrition. Yeah, I can briefly talk about all of these three topics.

00:32:57: Prof. Dr. Dietrich Darr: Um, non-timber forest products, um, are, for example, wild foods. Fruit trees that have traditionally been, uh, cultivated in certain regions already or that grow there naturally. And, um, the fruits of which play some role as, um, uh, food or are otherwise important, for example, as a source of, um, high value, uh, chemical substances that can be used for, uh, purposes in the cosmetics industry or for

00:33:28: Prof. Dr. Dietrich Darr: um, for the food industry and things like that. So, um, under the bioeconomy discussion where we'd like to try to get away from fossil fuels or fossil, uh, um, you know, crude oil and so on, um, I think these substances potentially gain importance, uh, in a lot of industries. Yeah. And trying to understand, of course, first of all, the resource base.

00:33:52: Prof. Dr. Dietrich Darr: So what type of, uh, foods are there, uh, in which quantities, what are their chemical ingredients? What can these, uh, ingredients be used for? How can they be, um, extracted at, uh, low enough costs in order to allow for an industrial views and things like that. Uh, these are some of the questions that we look into.

00:34:13: Prof. Dr. Dietrich Darr: Um, Um, the second area, agroforestry, I think, is, um, a topic which has some overlap, um, with the first one, but, um, um, as we can also grow such, um, you know, trees generating non timber forest products, wild foods in agroforestry systems. In essence, agroforestry is the combination of agricultural production and tree growing on the same

00:34:37: Prof. Dr. Dietrich Darr: uh, unit of land. Uh, why is this important? Uh, primarily because, um, growing trees on agricultural land increases carbon storage, which is important to fight climate change. It improves, um, the soil conditions. It, uh, improves the microclimate and reduces the amount of water that is needed for agricultural production and a number of other benefits, uh, ecologically, but also socially or economically to the land owners.

00:35:03: Prof. Dr. Dietrich Darr: And, um, in many regions in the world, you find farmers already practicing agroforestry, not so much in Germany. Uh, the, this, um, was a traditional practice, which was quite common 150 years ago, but with increasing specialization of agricultural farms and mechanization and larger units, et cetera, this practice has lost its importance.

00:35:27: Prof. Dr. Dietrich Darr: And we would like to contribute to developing agroforestry systems, which are. Adjusted and adapted to the ecological, but also economic and social conditions in a certain area. Take for example, the Lower Rhine Valley. Um, and we would like to investigate the type of crops and trees that interact nicely together.

00:35:49: Prof. Dr. Dietrich Darr: We would like to investigate the economic performance, social performance of these systems, the benefits these systems generate over conventional or traditional agricultural, uh, production and so on. Yeah. And one of the projects, um, one of the example projects in this field would be the, um, TransRegINT project, uh, part of which is our Agroforestry Living Lab.

00:36:12: Prof. Dr. Dietrich Darr: Basically that's, um, deals with exactly these questions here in the lower Rhine Valley and the third area on the contribution of, um, insects for animal or human nutrition, I think is an important topic as well because we know that with increasing economic development, people like to eat higher quality food.

00:36:34: Prof. Dr. Dietrich Darr: And, uh, many people increase their meat consumption levels at a global scale. So whenever people earn some additional income, they first of all buy better food, animal food products mostly. Um, but this comes with tremendous environmental cost. Um, and animal, uh, protein production requires a lot of, fodder and

energy input, and it causes a lot of environmental impact, uh, in terms of deforestation, for example, carbon emissions and so on.

00:37:09: Prof. Dr. Dietrich Darr: So finding alternative sources of animal protein, I think is one of the core challenges as well for the future food system globally at global scale. And insects can be a suitable source of this protein. Um, there exists cultures in which, um, insects are regarded as a delicacy and high quality food. Um, and, um, of course we also know that food is very often, uh, very deeply and culturally, uh, rooted in people.

00:37:41: Prof. Dr. Dietrich Darr: So we don't expect Europeans to eat, uh, insects very soon, very much. But still, it can be an important source, for example, for, um, animal protein. Also feeding animals. Yeah. Rather than, you know, using other sources that are, are currently, uh, important. So this is another field of research that is going on.

00:37:59: Prof. Dr. Dietrich Darr: And in addition to looking at the, um, protein source or the importance as a protein source, uh, colleagues of ours also do research on how can the leftovers of these production systems be used, um, to generate, uh, Um, some higher value, uh, uses. For example, how can valuable, um, nutrients be extracted from the leftovers and how can they, uh, be converted, for example, into agricultural fertilizer, or maybe other uses as well.

00:38:31: Prof. Dr. Dietrich Darr: Uh, so this is an evolving research field as well, and given that this was one of the topics that colleagues have experience or expertise in, uh, it also ended up as one of the, uh, core themes of our research center.

00:38:46: Hari: Do you have a lot of student assistants on

00:38:48: Hari: the

00:38:48: Hari: team?

00:38:49: Prof. Dr. Dietrich Darr: We do have a number of, I think three or so student assistants in the research center at the moment.

00:38:53: Prof. Dr. Dietrich Darr: Uh, they help us with, um, project applications sometimes. Um, you know, there are all types of, um, very urgent ad hoc changes that are required or formatting, uh, things that are required literature work that needs to be done in order to support, um, a proposal. Uh, and we do have these, um, student assistants also for supporting our public relations works or the website or, you know, some, um, some social media or poster making things like that.

00:39:30: Prof. Dr. Dietrich Darr: Um, yeah, and I think, I hope they will also learn about science or some of the projects we do and not just about these, let's say more administrative, um, aspects. And of course we do have a number of bachelor and master students who do their thesis with us. Um, and we do have PhD students. We work together in the ongoing projects.

00:39:52: Prof. Dr. Dietrich Darr: But I think also beyond that, yeah, there is always some dynamics going on, uh, where we pull together people also from different projects, the different professors, depending on the, the scope of a new research. Proposal that we have in mind, for example.

00:40:09: Prof. Dr. Dietrich Darr: Yeah.

00:40:10: Hari: What is the value that students will get from being a part of this project?

00:40:14: Prof. Dr. Dietrich Darr: Well, I

00:40:15: Prof. Dr. Dietrich Darr: think they can work in an inspiring, um, environment. They can, uh, work on topics that are important. They can work closely with, um, a number of researchers or colleagues in the research center who are very passionate about the work. They can get insights into ongoing project work. They can get orientation for their own research, uh, career if they want.

00:40:41: Prof. Dr. Dietrich Darr: Um, if I, uh, say research career, this can already relate to the question: what am I going to research in my bachelor's thesis, for example, so they, they can get inspiration. Um, sometimes there are opportunities in ongoing projects, um, which they can better assess once they have spent some time in the research center talking to colleagues who are in charge of these projects, talking to other students who have perhaps already been working on such projects or similar projects.

00:41:07: Prof. Dr. Dietrich Darr: So overall, I think this is a great, um, opportunity for those students who have an interest in doing some science, um, or for getting to know this you know, the, the food and environment and bioeconomy sector better, maybe because they have studied, um, a different subject in their undergrad or master's program, but still think that, uh, this is a sector which, uh, is of interest, uh, to them professionally.

00:41:37: Prof. Dr. Dietrich Darr: Uh, that could, can also be, um, absolutely fine yeah, if they, if we seek someone who supports our public relations work, uh, you do not need to have a background in, uh, agriculture. You can, well have a background I don't know what an international business, um, And then learn a lot about the sector by doing the work as a student assistant.

00:41:58: Prof. Dr. Dietrich Darr: And uh, so for people who are not in research, for me, especially students right, who are not involved in research, but who are also, well, they're in the system, right? As consumers, what could they do to play their part? I think, um,

00:42:13: Prof. Dr. Dietrich Darr: everyone should become more conscious of the choices they take when it comes to, uh, purchasing or consuming food.

00:42:23: Prof. Dr. Dietrich Darr: And, um, I I think this would already help a lot. Yeah. To consider how has the food been produced, where does it come from? What might be the ecological or social impact or implications of this food product, uh, more generally, uh, what might be the implications in terms of health? So is it really, um, a, a good choice to live from, I don't know what Coke and, uh, some sweets, uh, for a longer time, even though this might be an important, uh, source of, um, of energy during the exam period?

00:43:02: Prof. Dr. Dietrich Darr: That's no question. Um, I think being more conscious would already be a great, um, asset. However, we shouldn't forget about, uh, the fact that, I mean, consumer's choices are just one side of the coin. Yeah. Sometimes you see. Uh, or you, you hear people claim that we could transition the system if all consumers would make better choices, and I am doubtful to be honest.

00:43:25: Prof. Dr. Dietrich Darr: The second or the flip side of this coin is the institutional setup and the governance systems that exist. Yeah. We need laws and we need in international rules and institutions that, uh, lead to better outcomes in food production and food consumption. And, um, this means that we need to think about the way of how food production or consumption is being taxed.

00:43:50: Prof. Dr. Dietrich Darr: For example, how the inputs for food production are being taxed. Um, the types of incentives that exist for farmers or for consumers or food processors, uh, to do some. Uh, you know, ways of food production or consumption or processing and others not, um, and so on. We need international treaties. We need, uh, all types of actions, um, that ensure that the food system becomes more sustainable than it is currently.

00:44:19: Hari: If there are professors who, um, have specific research interests, um, or if there are students who are looking for, um, opportunities stuff, what, where should they go to? What should they do?

00:44:29: Prof. Dr. Dietrich Darr: We have got a website where we talk about the project that we do, the thesis topics that we offer. News that relate to our work and many other interesting, uh, things, uh, the, the colleagues that currently contribute to it.

00:44:44: Prof. Dr. Dietrich Darr: So as a student, I think that this is the first, uh, go-to point, uh, to inform yourself about the opportunities at our research center. Um, we also do have,

and now this applies I think, more to, uh, professors or staff members or PhD students. We do have our monthly get togethers on the very last Friday, each month in the afternoon where we talk about, uh, new projects and ongoing activities and also a bit of administrative work.

00:45:15: Prof. Dr. Dietrich Darr: So if you are interested in joining this group, then maybe, uh, get in touch with us and, uh, listen in into one of these meetings to find out more.

00:45:25: Stephan Hanf: The

00:45:25: Stephan Hanf: website, it's already running that he mentioned in your interview?

00:45:28: Hari: Yeah, it's been running for a while. It's, um, called foodsystems.institute

00:45:37: Hari: Lesson number three: waste Isn't Always Waste. And uh, one of the research projects that, um, won an award was by, uh, Dr. Connor Watson.

00:45:47: Dr. Conor Watson: Hello, my name's Connor

00:45:48: Dr. Conor Watson: Watson. I, um, I'll stick with scientific staff. So, um, the slaves of the professors, you could say. And I've been working at this fine institution for, it will be 12 years in

00:46:02: Dr. Conor Watson: September.

00:46:03: Hari: And, um, he works with, to use his own words,

00:46:07: Dr. Conor Watson: How, how did

00:46:08: Dr. Conor Watson: I end up working with Insect shit? I'm not involved in producing edible insects myself, but I've been working with the byproduct of insect larval production called frass.

00:46:20: Hari: And for us is basically in layman terms, larva, poop, I'm

00:46:25: Hari: guessing.

00:46:27: Dr. Conor Watson: Yeah. It's um, a mixture of larval excrement and their shed exoskeletons and the food that they have not consumed.

00:46:38: Dr. Conor Watson: So it's very, very nutritious and that's why it sparked a lot of interest within the, uh, insect larval production industry. Ha ha. Do we have a zero waste industry if we can use this, uh, larval poop, as you say, as a organic fertilizer? The production of insect larvae on an industrial scale is something that's booming in Europe now.

00:47:01: Dr. Conor Watson: We have several million tons of insect larvae being produced annually, and that means you're gonna have several million tons of frass as well. But there's startup companies all over. So Germany, the Netherlands, Belgium, Denmark, Portugal, Spain to name but few. Um, and we've got samples of the frass from various companies in various, uh, countries all over Europe.

00:47:25: Dr. Conor Watson: Europe is the only continent in the world in which eating insects is not a norm. So it's certainly, um, carried out much larger scales in, um, South America, parts of Asia, Africa, certainly in those continents. I can't speak to the regulation there, but I know that it's, the frass would be used, um, as a fertilizer without the sort of regulatory, um, hassle that, that, that EU countries are shortly about to experience.

00:47:57: Dr. Conor Watson: Um, the, the frass here, for example, needs to be heated to 70 degrees for an hour in order to reduce potential transmission of pathogenic bacteria to the human consumers. Um, whereas you might have spread onto the field later, a lot of the producers of insect larvae find this to be unnecessary. It's gonna be very costly and it could also have environmental detrimental effects, but certainly, yeah, it's, it's, for us, it's a nutritious byproduct of insect larval production and it's being used

00:48:33: Dr. Conor Watson: in various soils all over the world. Certainly I imagine more liberally in, in poorer countries where there's less money for traditional mineral fertilizers.

00:48:44: Hari: And,

00:48:44: Hari: uh, how, how is frass, um, better than the more traditional fertilizers? Not just the mineral fertilizers, but I, I also think of other biomass type of fertilizers like from cow, cow, um, faeces and stuff.

00:48:58: Hari: So how would frass be better in terms of environmental?

00:49:01: Dr. Conor Watson: Yeah, so overall, if you're thinking about the lifecycle assessment, you think about, okay, um, if you take a cow for example, and the amount of

greenhouse gases that a cow belches and farts out are, are vastly, vastly outweigh what, what, um, mass of larvae would, would emit.

00:49:19: Dr. Conor Watson: So the, there's already a huge reduction in greenhouse gas emission for the comparable amount of protein you'd get from larvae, uh, compared to a cow. Um, with regard to the excrement, well first start, the insects don't excrete urine. They only excrete, um, excrement you could say. So it's much less fluid than, than, yeah, a lot of, lot of fertilizers taken from the mass production of cows is of course, very, very fluid, uh, manure or, or slurry.

00:49:54: Dr. Conor Watson: Then the traditional fertilizers, if we're talking about the mineral ones, they, they are made with a lot of energy. If we're trying to get nitrogen from the air into a reactive form that can be taken up by plants. We need to combine nitrogen and hydrogen with under very high heat and pressure, this Haber-Bosch process and that, that, that requires a lot of energy to make.

00:50:22: Dr. Conor Watson: And same with things like phosphate fertilizers. They're often hoarded by, um, countries are not particularly politically stable. And also some of these things can have trace contaminants of nasty heavy metals such as cadmium. So in frass we've got plenty of nitrogen, plenty of phosphorus in plant available, uh, form already.

00:50:47: Dr. Conor Watson: But yet the, the big challenge with using the frass as a fertilizer is that it's hard to predict what this ratio of nitrogen to phosphorus to potassium is. These are the three nutrients that plants require in greatest quantities and the ratio of these three things, and the frass often depends on what the frass have been fed.

00:51:08: Dr. Conor Watson: And that has a huge influence on, on your end product.

00:51:11: Hari: And,

00:51:11: Hari: um, the people

00:51:12: Hari: who are producing the larvae, who, who are these people actually, and how long have they been around? Um, where

00:51:19: Hari: do you get your specimens

00:51:20: Hari: from as well for your research?

00:51:21: Dr. Conor Watson: Okay. Yeah, so there's, there's various small to medium sized companies around Europe.

00:51:27: Dr. Conor Watson: Um, some are better established than others. Some are much more slick than others. Some might just be a person passionate about insects who, who started growing mealworm in a very, very small scale or whatever it might be. But there's, there's larger companies, certainly it's a well established industry in the Netherlands.

00:51:46: Dr. Conor Watson: Um, basically some, the, some of the larger producers are, are taking these larvae and using them for bird feed um, Fish feed, and they might be producing larvae with the, with the goal of extracting the lipids within them for the pharmaceutical industry. Um, so there's various end uses of, of the protein and fats within larvae, but there's companies all over Europe.

00:52:14: Dr. Conor Watson: I've meet various producers at, um, a yearly, um, conference held in Brussels and anywhere else, asked them for the samples of their frass. And they're delighted to, because for many companies, this is kind of, uh, a bit of a problem. What do we do with this byproduct? A lot of them haven't diversified into, they're, they're concentrating on the larval production and they're not, um, nor they haven't found a good end user of the, the byproduct for us yet.

00:52:41: Hari: Why not also from the adult insects, like why just the larva,

00:52:45: Hari: excrement?

00:52:46: Dr. Conor Watson: Um, yeah, so if you're only interested in the, the protein and lipid extraction, that's much easier to extract from a larvae rather than the next stage, which should be a pupa or the, the adult insect. So, um, these poor things are mashed up and the chemicals are extracted from it.

00:53:06: Dr. Conor Watson: So we could have a whole tangential discussion about where we stand morally on that. But I think most people would have much greater sympathy for a vertebrate or a mammal than for, for an insect larvae. Um, but yes, I would like to hope that they don't suffer too much. Um, they can be freeze dried, so it's a quite quick, quick death.

00:53:30: Dr. Conor Watson: If they're gonna be used in say, um, edible snacks and, and, and Ian for example, you can get these dried mealworm larvae that are flavored sour cream and onion or whatever. So once you get over this, Initial repulsion, I'm eating this horrible looking insect larvae, it tastes just like a flavored pretzel or whatever.

00:53:50: Hari: Have you ever

00:53:52: Hari: experimented with that kind of

00:53:53: Hari: cuisine?

00:53:54: Dr. Conor Watson: Um, there was a Mexican student a while ago who took in some edible grasshoppers, and I did eat them. And it's a, I really can't describe what sort of, um, experience it was. I don't, I didn't dislike it, but nor did I like it. So, um, I, I really can't describe the flavor either.

00:54:18: Dr. Conor Watson: It was, it was spicy, but not in a, in the way that I'd ever experienced before and slightly salty. Um, so it isn't an experience I would willingly repeat too often, but I, nor is it one which I regret. Something like an incredible 75 billion tons of soil are lost annually to water and wind erosion. And look at the population of the earth now.

00:54:46: Dr. Conor Watson: What? We are over 8 billion now approaching nine. And as nations like China, India become wealthier and they are, the demand for meat is going up. And therefore, um, quite often that's a, that's a land intensive way of generating that sort of protein. So it can use, it can cause land use changes. Then you've got conversion of forests or grasslands to cropland, for example.

00:55:16: Dr. Conor Watson: And, um, where you've, you have cropland generally you have poorer soil protection is you have potential loss of the topsoil, the potential to lose soil through water and wind erosion is higher. So you've got this growing population and this wonderfully fertile, thin layer around the world that feeds the soil is dwindling.

00:55:38: Dr. Conor Watson: So there are ways of offsetting that, and we should certainly incorporate a lot, as much organic matter into the soil as possible to try and build up the carbon there again. But I don't know how pessimistic the, the prognosis is, but, um, I would find that very, very depressing if I, if I, uh, juxtaposed increasing population and their eating habits versus how much fertile soil is left in the world.

00:56:06: Dr. Conor Watson: There needs to be a sort of collective acceptance of the reality of, of global warming and the reality of soil erosion. And then if there's more and more people that would embrace vegetarianism veganism, for example, then we're diverting far smaller proportion of our grains into fodder for ruminants.

00:56:31: Dr. Conor Watson: So I think about three quarters of all the grains produced in the world end up inside a cow or a sheep or a pig or whatever. And if we can stop doing that, then there's the hope of, um, feeding this expanding human population better and in a less environmentally destructive way. But if people are gonna insist on eating meat, you know, I, I'm not gonna be a hypocrite here.

00:56:54: Dr. Conor Watson: You know, I, I, I also am not, um, I'm vegetarian. I certainly have reduced the amount of meat to eat, but I still find it tasty. Um, I've tried a insect burger. That wasn't as good as a beef burger. Um, there was recently a, um, ethical burger produced. So, so from stem cells, a burger was grown in a Petri dish and it costs, I figure forget what a hundred thousand euros to make or something like that.

00:57:22: Dr. Conor Watson: But I imagine as biotechnology gets better and better, I think there's a pilot scale, um, factory that's been set up somewhere. I can't remember where, but if, if this could allow us to, to have meat without an, any animals suffering, that would be an incredible, uh, leap forward, I think. But otherwise, I think it's, it's necessary for, uh, meeting to become a luxury and not the norm.

00:57:52: Hari: Lesson number four: not all packages were made the same.

00:57:57: Stephan Hanf: And then again, we talk about, um, closing the loop, right? Because then, uh, you're not only farming the animals for consumption, but you also use, um, the same thing with the cows so that, that you, uh, or with the milk production that you use the waste products of the insects.

00:58:13: Hari: Exactly. Exactly. Um, it's related to circular economy and, um, the person who I was speaking to about circular economy was another professor on the Sustainable Food Systems Research Center.

00:58:27: Prof. Dr. Matthias Kleinke: Yeah. My name is Matthias Kleinke. I'm coming here from the Faculty of Life Sciences. Uh, I'm here professor for Environmental Technology for, wow

00:58:36: Prof. Dr. Matthias Kleinke: 12 years now.

00:58:37: Prof. Dr. Matthias Kleinke: And,

00:58:37: Hari: um, he has worked also in the government sector in, uh, waste management. What do you deal with in this field?

00:58:44: Prof. Dr. Matthias Kleinke: Actually more with processes than with classical construction of

00:58:48: Prof. Dr. Matthias Kleinke: technologies.

00:58:49: Hari: So

00:58:49: Hari: processes like, um, you deal with things like circular economy and stuff.

00:58:53: Prof. Dr. Matthias Kleinke: Yeah, of course.

00:58:53: Hari: That's a big part of your, that's a, that's,

00:58:55: Prof. Dr. Matthias Kleinke: yeah.

00:58:56: Prof. Dr. Matthias Kleinke: And big thing, um, focused on this, uh, on this biomass topic. But actually, as I told you, yeah, I worked for eight years in, in waste management companies for the circular economy and what is behind and what is the idea and how can we learn from nature to apply that, uh, into our technical process. So this is something I'm, yeah.

00:59:19: Prof. Dr. Matthias Kleinke: In and I'm interested in.

00:59:21: Hari: Could, could

00:59:21: Hari: you explain what

00:59:22: Hari: circular economy is?

00:59:23: Prof. Dr. Matthias Kleinke: There are two different ideas actually, how to use and apply natural processes. What we did as humans for a long time is, um, and probably it's good to recognize that's, uh, as an an opposite probably. So what we did is we have a linear economy.

00:59:43: Prof. Dr. Matthias Kleinke: So that means we are taking something, we are using it, we apply it, and we dispose it and it lies somewhere or we burn it. Whatever we do with this is, uh, not circular at all. Uh, circular would be if you try to close as nature does the cycles, so the material cycles, but also use the energy which is available in there and, uh, construct a pro product in a way that you can use the material afterwards to rebuild or use again, uh, the materials for a new product.

01:00:20: Prof. Dr. Matthias Kleinke: And, uh, on the other side also try to close circuits, not just for the material itself, but also for, uh, other used commodities or raw materials or water or, yeah. That you, uh, try to keep, uh, processes, uh, running in a way that we reuse as much as possible from the things we apply or use in our daily life.

01:00:46: Hari: Okay. And, and, and which point did people start to realize that they had to make a transition from a linear economy to a circular economy?

01:00:55: Prof. Dr. Matthias Kleinke: Uh, I think it's an, there are a couple of reasons, uh, why we do that. Yeah. People realize that we have a waste problem. Yeah. That a lot of space is needed for landfills.

01:01:05: Prof. Dr. Matthias Kleinke: For instance, if the, uh, waste reach the landfills, you probably know, uh, we here in uh, Germany have an in waste management system, which has a long history and a long experience and it works. Relatively good. Uh, but in a lot of parts in the world, there are a lot of challenges because, uh, the waste management systems, uh, are not there, uh, or developing.

01:01:30: Prof. Dr. Matthias Kleinke: And, uh, so we see a lot of waste even around, especially now we have this plastic booms in a couple of decades. And so the waste does not really degrade very fast. It lasts a long time, which brings, which brings us also additionally beside this, Space, uh, reasons, uh, problems which, uh, are coming up. Another one is that we have a shortage of different raw materials, commodities, uh, yeah.

01:02:01: Prof. Dr. Matthias Kleinke: And we know that from different metals, but also, um, of course crude oil. Um, and gas is under discussion now. We have the, um, yeah, political barriers, challenges as well. Uh, we say, okay, we want to try to be independent, which, which works simply better if you have the material, uh, in a cycle compared, uh, to, uh, taking new ones and put it somewhere where you cannot use it anymore.

01:02:31: Prof. Dr. Matthias Kleinke: I, I think it's not one point where you said, okay, from now on we thought we should have to do something uh, totally different. I think it was a long process and it has to be, uh, also an international process. Yeah, it makes, it is very, important on one side for different technologies that we here in Germany are the front runners or uh, whatever that there, there has to be wherever.

01:02:53: Prof. Dr. Matthias Kleinke: Yeah. But, uh, I think, uh, it is also very important that we generally and altogether are thinking how we, uh, want to, uh, design our, uh, future in a way, and how we are able to make things more sustainable. Sustainable is a big word, and we could discuss.

01:03:14: Hari: He seemed a

01:03:15: Hari: little bit skeptical about the word sustainability.

01:03:19: Hari: He expressed that he's not satisfied with how it's being thrown around everywhere uses as a buzzword.

01:03:24: Prof. Dr. Matthias Kleinke: Uh, I'm a bit, uh, yeah, skeptic about this more and more or more intensive use of this, uh, word. Inflation of, of using, uh, sustainability. Uh, because most of the things, uh, we are talking about a sustainable, are not sustainable at all.

01:03:40: Prof. Dr. Matthias Kleinke: Uh, but, uh, in future we have to, I guess, uh, to think about more what we are doing, what we are using, and uh, to understand that this planet is limited in a way.

01:03:51: Hari: Please tell me

01:03:52: Hari: more about that. What is sustainability? And then we go from

01:03:55: Hari: there.

01:03:55: Prof. Dr. Matthias Kleinke: From my personal, uh, point of view. Yes. Sustainable. In a sustainable way

01:03:59: Prof. Dr. Matthias Kleinke: we lived, I dunno, probably 10,000 years back, uh, there we were able to be part of a nature on this planet and a part of this living together of all the organisms. And then we started somewhere to settle down to produce things, take influence on nature around us. Yeah. Try to get, not just not hungry anymore.

01:04:23: Prof. Dr. Matthias Kleinke: Yeah. Try to get rich. And this, uh, is the general problem. Uh, we have, yeah. If we want to get more, uh, and develop things and uh, want to have more material goods. This is something what it's not in common with the, with the idea of sustainability. Yeah. Where you, where you have to have, I guess an Yeah. The idea behind is what is it that is

01:04:46: Prof. Dr. Matthias Kleinke: that the people in future can live without, uh, any restrictions in a way as we are Yeah. Using the material from now without limiting, uh, future generations. This is what, what sustain the definition we have for sustainability. But this is, uh, quite hard. Yeah. When you have an, a limited amount of, uh, things available because this planet is round and we are not really intensively in exchange, uh, with some other planets.

01:05:14: Prof. Dr. Matthias Kleinke: So there is an an a limitation. Yeah. And this means we should reach a stable balance and to get that, to reach that, this is really quite hard in our

modern world. Yeah. So even if we do processes, design and whatever, more environmentally friendly, it's not sustainable from my point of view. Car with an electric drive is not sustainable.

01:05:42: Prof. Dr. Matthias Kleinke: Yeah. Use a lot of goods and for most of them, we, uh, do not know right now how to keep it in this cycle we talked about. Yeah. So it is an, a good idea and in development and a step forward, but I guess, uh, really to call it sustainable, that would mean that we, uh, really haven't 100% recycling available for those things.

01:06:07: Prof. Dr. Matthias Kleinke: And this is something we are working on, let's say, let's say it in an optimistic way. And so, uh, we have to work on, and there is, uh, a lot of, uh, questions we still have, uh, for future generations and for young people, uh, to find solutions in. And this is what we are working here and at this university as well.

01:06:25: Hari: Do you think it's

01:06:27: Hari: theoretically, um, possible. Do you think it's theoretically possible to reach a hundred percent?

01:06:32: Prof. Dr. Matthias Kleinke: Uh, probably not a hundred percent, but we have to get better. Yeah. I think when you see in, in, in different, when you compare different materials. Yeah. We have good recycling systems, uh, for glass and for paper for instance.

01:06:46: Prof. Dr. Matthias Kleinke: Yeah. You know, we have all these bins and put it and collected and in both we have really high recycling rates, but in glass, from the, from the technical point of view, you can melt glass, and glass comes out. Yeah. And this works quite good. When you use paper, then you have in each recycling, uh, process also causes and change in structure of the fibers in there.

01:07:10: Prof. Dr. Matthias Kleinke: That means after a while it loses quality simply. Yeah. Because it is a material which has this special properties actually. Yeah. Recycling paper makes incredibly sense, but we will not reach a hundred percent. Uh, this is, uh, what I want to say with a,

01:07:24: Hari: A

01:07:25: Hari: big takeaway

01:07:25: Hari: from my conversation with Professor Kleinke, was how it's never an isolated system.

01:07:31: Hari: What about people who are not in research? What could they do to maybe help with this process? Like of course we could talk about consumer behavior, for example. Mm-hmm. Like if I wanna buy a Coca-Cola, it comes in different types of packaging. Yeah. Right. Some are just more sustainable than others. Like, how would I make these decisions in on a

01:07:50: Hari: daily basis?

01:07:51: Prof. Dr. Matthias Kleinke: Yeah. I think, uh, knowledge plays an important role. And I think this has also to be, uh, yeah. To be supported not just by education, but also by, let's say political guidance. Yeah. Or let, or let's say not misguidance. Yeah. There are different ways how, uh, you, uh, can get your Coca-Cola from. Yeah.

01:08:13: Prof. Dr. Matthias Kleinke: You could have glass bottles, you could have plastic bottles, you could have cans, you could have whatever. Yeah. Tetra packs are not so good for Coca-Cola, but it's also an option. Yeah. And, uh, and there is a lot of, uh, investigation was going on, which is the best packaging. And this depends. Here, the, the circumstances are so, so different.

01:08:32: Prof. Dr. Matthias Kleinke: Yeah. If your Coca-Cola bottle goes or stays somewhere here, nearby, then probably the glass bottle, the recyclable or the reusable glass bottle is the best. Yeah. But we have bad examples, uh, for this application as well. Yeah. When you think about beer for instance, instead of Coca-Cola. Uh, Coca-Cola is a very, isn't standardized.

01:08:53: Prof. Dr. Matthias Kleinke: Yeah. We just have, just talk about Coca-Cola, but we could also talk about Afri Cola. But if you think about the beer market, it's incredible. Yeah. In former times, we had one standard bottle, and if you want to buy a beer from whatever, from Northern or Southern Germany, it was in the same bottle. Yeah. Now try to buy in beer from Northern Germany.

01:09:11: Prof. Dr. Matthias Kleinke: It comes from Jever, it comes from Flensburg, it comes from whatever, and all the bottles have a different shape. What's going to happen with these bottles? Yeah. So if you want to buy an uh, beer from Flensburg, it's not just that the bottle goes one way. It has also to go the other way to go back to this. Yeah. So we have two transport ways, what makes no sense mm-hmm.

01:09:31: Prof. Dr. Matthias Kleinke: Beside its best, uh, trying local beer. Yeah. Then the transport is also for the one direction not that far. But this is what I mean. You, you get the point. Yeah. If the transport plays a very important role, the weight also is important. That means if the transport distance is long, probably there are better options.

01:09:50: Prof. Dr. Matthias Kleinke: Yeah, probably that's also the reason for why Coca-Cola is, uh, using this reusable, uh, plastic bottles because they're not so heavy. I don't like plastic bottles, uh, because I, yeah. Plastic is problematic, uh, anyhow, but to make a whole assessment, uh, yeah, you have to see the whole picture. And then different solutions might also make sense in a way.

01:10:17: Prof. Dr. Matthias Kleinke: I'm really a fan of, uh, reusable packaging and of glass. But if you see, that's what I think about this political guidance here. The decision to put the refund on cans, for instance. Yeah. Which is relatively pricey. Yeah. So 25 cent for one can, uh, Changed the whole market. Yeah. It's because people bought the beer because it is so cheap and the can has no refund and I can throw it away now the refund is very high, so there are just a limited amount.

01:10:49: Prof. Dr. Matthias Kleinke: It makes no sense to buy beer in, in cans. That changed a lot. On the other side, we have this one way plastic, uh, packaging for water and or whatever. Yeah. These PET bottles, which can, are not reused, they're recycled, but it's an incredibly successful system because of the high price. And nobody is throwing away this bottles in our, uh, canal, uh, here because it's too pricey.

01:11:17: Prof. Dr. Matthias Kleinke: Yeah. They bring it back and there is some recycling, uh, system possible because it's just a bottle and it is not a mixture of different wastes so that it's not dirty, it's clean. It's one material. It works. Perfect. Yeah. Very good. Uh, yeah. I wouldn't buy beer and plastic bottles, but it works very good.

01:11:39: Prof. Dr. Matthias Kleinke: Yeah. I just think it's not so easy to say we have one solution and, uh, the assessment, uh, of the influences on the environment, uh, is even more complicated because yeah, you have to include also the transport, the cleaning effort, the whatever, uh, which has to be added. Uh, and if you need more oil for cleaning and transport as to make a plastic packaging for yogurt or whatever, I don't know, bests to buy a yogurt by a farmer nearby.

01:12:17: Prof. Dr. Matthias Kleinke: Mm-hmm. Yeah. That's when you ask me what is the solution for that? I, I have no, uh, but if you ask me, try to keep it simple and not to drive yogurt all over Germany.

01:12:29: Hari: Mm-hmm. Um, so you've been, um, involved in this area for quite some time now, and, uh, you've highlighted how everything is so interconnected.

01:12:37: Hari: Mm-hmm. So many moving parts. It's a very complex system. In all the years that you've been involved in this, have you seen any significant, like, are we significantly moving in a, in a good direction, and are you optimistic for the future? You can be completely

01:12:51: Hari: honest.

01:12:54: Prof. Dr. Matthias Kleinke: Uh, it would be very frustrating if I, uh, would uh, say, oh, oh, everything is dark and nothing happens.

01:13:01: Prof. Dr. Matthias Kleinke: Of course, we have to go on step by step and we have to find solutions, uh, for the challenges. But, um, yeah, I think, or I really try to point out that we have to get faster as we are right now. I think, yeah. Right now, during the last years, and we are realizing that the, uh, the challenges we have, uh, are growing faster than our solutions are, uh, growing.

01:13:27: Prof. Dr. Matthias Kleinke: This is, yeah, we have in higher and higher demand on different commodities or energy and, uh, on, uh, the other side. For instance, the renewable energy sector is not growing, uh, worldwide as fast as our demand is. Uh, and actually we should have an, a total change right now. Yeah, we should reduce our, uh, fossil fuel use for climate issues very dramatically, but we are not doing.

01:13:54: Prof. Dr. Matthias Kleinke: Yeah. So if you see the development of our behavior, then I'm, uh, I'm, I don't want to say pessimistic, but then I think there could be, uh, we have to work on, um, to show the optimism even better. But I try to be diplomatic, but it's not so easy. Uh, but on, on the other side, there, there's a lot of motivation when you see, uh, how the people are changing their, uh, their ideas, their behavior, their engagement.

01:14:25: Prof. Dr. Matthias Kleinke: Yeah. And this not just here in, in, in Germany and Central Europe, in Europe, uh, but also all over the world. I think we have to limit ourself as well, especially here in, in our region, by reducing our consumption in different ways. Yeah. And this is, we have to find out, or we have to think about if this is, it sounds like a limitation, but I'm not really sure if it has to be.

01:14:53: Prof. Dr. Matthias Kleinke: Yeah. Uh, if we don't, uh, less consumption must not be less fun, actually. We know that. Yeah. All of us have much more things as we need, and it is not really an advantage also for, for your mind, for your happiness, for your whatever. But it's, it's, it's just an, a short term fun you have when you buy a new phone, bike, car, whatever.

01:15:19: Prof. Dr. Matthias Kleinke: Yeah. Actually it's not useful.

01:15:26: Hari: Lesson number five:

01:15:28: Hari: just explore.

01:15:30: Stephan Hanf: Is there anything else I could do? Like as a consumer?

01:15:34: Hari: Another person that I spoke to did give me some answers and, uh, she is, well actually she was the reason that this episode was even possible. Um, Dr. Katie

01:15:45: Hari: Meinhold.

01:15:46: Dr. Katie Meinhold: I'm Katie, I work here as a research associate in different projects and I coordinate the Sustainable Food System Research Centre.

01:15:56: Hari: And,

01:15:56: Hari: um, her research is

01:15:58: Hari: in wild foods.

01:15:59: Dr. Katie Meinhold: Well, basically you can find them anywhere. Um, you, I mean, you can also go out in Kleve there to the forest and yeah, right now wild garlic season is almost over, but there's a lot of mushrooms as well. So anything basically you can find in the wild and which is edible are, are wild foods.

01:16:17: Dr. Katie Meinhold: Um, and it's, yeah, it's, the research is getting, yeah, uh, there's a lot more and more research on these products. Being, um, being conducted? 'cause we know, um, well, our normal food system really mainly consists of very few plants which are grown. I mean mainly corn, uh, rice and wheat. And they make up really the majority of all, of, most of our nutrition.

01:16:44: Dr. Katie Meinhold: Don't know the exact percentage. But we're knowing now that this is not really that sustainable, both from a health perspective, for a individual, but also for our planet. So if everything just comes from very few plants, um, it's not very sustainable and not very healthy. So there's a huge potential in exploring these wild foods

01:17:04: Dr. Katie Meinhold: more so both, again, from a nutritional perspective, it's quite healthy. They have, uh, lots of vitamins, phytochemicals, um, and also these species are often more adapted to climate change. Like, uh, my, my baobab example, it grows in areas, it grows in sub-Saharan Africa, where hardly any other plant can grow. So, and it can provide nutrition and income to their local people.

01:17:28: Dr. Katie Meinhold: So if we can boost such industry based on these plants in a sustainable way that can be, you know, be a, a little, um, part of making the world our food systems a bit more sustainable.

01:17:42: Hari: So how did it get to this point where so many plant species were just ignored?

01:17:46: Dr. Katie Meinhold: Huh? How did we get to the that points? I mean, uh, that goes probably back in history a long time where Yeah.

01:17:54: Dr. Katie Meinhold: People started settling and where agriculture started, um, just to make life easier as well. I mean, hunter gathering, it's also very tough, huh? If you don't find something, um, Then you're hungry. So just, um, having agriculture, I mean, of course helps, helps a lot. You can settle down and you can store things.

01:18:15: Dr. Katie Meinhold: If it's more, it's more easy maybe to survive. But nevertheless, we probably lost a few things, um, that we see in our, all these, um, um, diseases which are in the, in yeah very developed countries which appear with obesity and coronary heart disease. And that is also due to this different type of lifestyle we have now.

01:18:40: Dr. Katie Meinhold: So we have to find a, a balance somehow. I think we're good getting to know this. A lot more and that there's a real trend of a bit more maybe. Yeah. Getting back to the roots, people are really more interested in collecting wild foods. Um, I think the knowledge is getting, it's getting more attention out there.

01:19:00: Dr. Katie Meinhold: There's a lot of healthy foods out there we don't know of, and that there's, um, these diets where we just, yeah. Highly processed foods just based on the five, six main main crops. It's not really healthy or very sustainable, I think. And people, I think it, yeah. Yeah. They really want to change something. And, uh, yeah.

01:19:23: Hari: So the

01:19:24: Hari: baobab tree is, seems to be

01:19:26: Hari: a very,

01:19:28: Hari: it's, it's a big part of the research projects that go on in this, um, research

01:19:33: Hari: center.

01:19:33: Dr. Katie Meinhold: And baobab has been used on a small scale for centuries or thousands and thou thousands of years. And I wanted to understand, so why did this fruit make it that you can find it in an

01:19:45: Dr. Katie Meinhold: organic supermarket in Germany. So what, yeah. Well, what changed? Because it can be a model then for other species, if we see other species which have good potential, uh, what can we learn from baobab and everything, well figured out everything has to be done differently. So the way you harvest, for instance, how we store the fruit, how you process the fruit, um, everything, there's innovation everywhere.

01:20:09: Dr. Katie Meinhold: So how we organize the supply, um, and then yeah, to ensure, because if you want to hit, reach these high value markets, there's tons of, um, safety standards, food standards you have to fulfill. Um, so it's really difficult for a farmer in, in, yeah, let's say Malawi, first of all to know about these and then to reach these quality standards to yeah, be able to sell in, in Germany.

01:20:37: Dr. Katie Meinhold: So there was a group of people, um, Who basically got together and pushed this, and really just with trial and error, tried to, uh, how do we organize this? What machines do we need? Or which machines do we need to develop, um, to, yeah, to, to, to solve

01:20:52: Dr. Katie Meinhold: this?

01:20:53: Hari: Like who, who collects this? Who collects wild foods?

01:20:55: Hari: Uh,

01:20:55: Hari: right now?

01:20:56: Dr. Katie Meinhold: Yeah. Well, mm-hmm. It, it depends where you are.

01:20:59: Hari: Oh yeah. Okay.

01:21:00: Dr. Katie Meinhold: So, so first of all, I think it's really. Um, a lot of people do it on the whole globe, wherever you are. Um, I mean, a lot of research has been carried out on really assessing a diets in, in very rural areas or really it's associated sometimes with, um, very poor people as well who really depend on the forest to actually, for example, if there's the harvest fails, they ha they have to go to the forest and collect foods to be able to survive.

01:21:26: Dr. Katie Meinhold: So that, that's one group of people. But it's also, I mean, if you go, a lot of people in Germany also collect wild foods 'cause it, it's also a cultural thing. Certain ingredients, uh, you know, seasonal ingredients, um, are very common here. So just right now we had the wild garlic season and you see it in restaurants, you see, you see it everywhere.

01:21:48: Dr. Katie Meinhold: So it's just got various components like cultural, health wise, sometimes pure necessity that you have to go out and collect. But, um, the reasons why people do it are, are very diverse. Um, yeah. But yeah, a lot of research has focused on these on, in, in so-called developing countries where people really, um, uh, rely on the forest and that it can be a really high share of the

01:22:14: Dr. Katie Meinhold: income or, or, um, subsistence needs, I think up to 20, 30% really, if the income comes in from the forest.

01:22:23: Hari: And, and

01:22:23: Hari: how vulnerable are these crops? Like what are the environmental challenges they face? How easy, how threatened are, are they?

01:22:31: Hari: Yeah, that would depend on the species.

01:22:33: Dr. Katie Meinhold: It,

01:22:34: Dr. Katie Meinhold: it really depends on the species and that's really, yeah, it's a, it's a critical point because, um, of course we, well, on the one hand we want to advertise, uh, the use of these wild foods 'cause they have so many benefits and then create income.

01:22:48: Dr. Katie Meinhold: But on the other hand, it's because they're still wild. It's often, uh, it goes along a fine line. So if they become too popular and too many people collect, uh, then they might become threatened, like the tragedy or the commons and that's it. So we need to find ways, how, how do we find the balance that we can get the benefits, but don't threaten the species and that.

01:23:11: Dr. Katie Meinhold: Depends a lot on the species and, uh, the situation as such. So, I mean, baobab is a fruit, so the harvesting is actually pretty, you, you don't harm the species as such. Whereas if it's a, a plant where you use the leaves or everything, um, the chance for over exploitation is a lot more present. Um, yeah, so basically you would need to sort certain systems or, uh, like harvesting procedures or permit system, how much you can harvest in a certain area.

01:23:42: Dr. Katie Meinhold: You would need that information for every species you want to look at.

01:23:46: Hari: One area, which

01:23:47: Hari: was, which really stood out to me. So I was reading a United Nations report, um, on the state of 12 wild foods like the, the wild dozen mm-hmm. They call it in the report. And something that that caught my attention was almost all of them had a very high risk in the social dimension.

01:24:04: Hari: So exploitation of workers and child labor mm-hmm. And, and things like that. So for the plants that you have researched, for example, how is the situation when it comes to,

01:24:18: Hari: comes to that?

01:24:19: Dr. Katie Meinhold: For baobab what comes to my mind? I mean, the, the, the trees are extremely tall, like 30 meters, and the harvesting is often done by kids as well.

01:24:30: Dr. Katie Meinhold: And they just climb the trees. And accidents do, do happen. They don't have any, it's not really safety precautions, so, um, That is a, that is a very dangerous factor. And also for other fruits or nuts collected from trees, that can be a really dangerous thing or issue that might need more, more attention. Um, so what we, or the people who do the baobab, um, harvesting more, let's say more on a professional level also hitting the export market or the certified market.

01:25:03: Dr. Katie Meinhold: They advise only to, um, harvest the ripe fruits, which fall to the ground and not, they advise not to, not to climb the trees. Um, but yeah, if it, it again depends as in, in Malawi, if it, the baobab is ripe just before the, the corn gets ripe. So it's a kind of a hunger gap situation. So if you really depend on this fruit or you need income to sell, it's,

01:25:32: Dr. Katie Meinhold: you wouldn't wait, uh, until it falls down, but if you really need it, you, you do climb the tree. So, um, yeah, it's, some, some things are, are tricky. One, one way, um, that is often like, um, also to, yeah, to make it easier for the people, but also to, um, Yeah, to sustain the species is then to start cultivation as well.

01:25:57: Dr. Katie Meinhold: So then you basically, again go into agriculture. Yeah. That try to cultivate these plants close to the house. 'Cause another issue is if you go into forest, it might sometimes be dangerous. Oh, depending with wild animals or whatever. So try to co try to cultivate, um, the species closer to you that you can more easily harvest, safer harvest, et cetera.

01:26:21: Dr. Katie Meinhold: Uh, that can always be a way, but I mean, for baobab it takes so long. I mean, it takes 20, 30 years until they have fruit. So we, we've started some research on it, how to, with grafting or something to make it easier. But that's still a long way to go. But for some species that works for some others, uh, doesn't work

01:26:39: Hari: For

01:26:39: Hari: just your average Joe, like, um, your average listener for students, whatever.

01:26:44: Hari: Um, what part can they play in this whole big picture, like how can they help the industry of, um, wild foods and what could they do as individuals also to contribute to like the bigger picture?

01:27:01: Dr. Katie Meinhold: Well, my focus come from the yeah, nutrition and food perspective. So I, I think everything changing because consumption habits helps a bit.

01:27:09: Dr. Katie Meinhold: Yeah. Or can definitely, yeah, definitely helps. So checking, where does your food come from? Um, and what is my food? So Yeah. Say, say it may be produced in the more sustainable way or not. So yeah. If, if everybody would change their diets a little bit. 'cause agriculture and our food systems are responsible for so much in terms of climate change and, um, destruction of ecosystems.

01:27:34: Dr. Katie Meinhold: So changing, adapting diets is a big, big thing every, everyone, everyone can do. Um, I think everybody, that's not news. I, I think everybody knows that, but it's really difficult to change, change, uh, certain, yeah. Change one oneself. Um, but yeah, try around this if you're interested. Also try, say there's tons of books and around, um, what, what you can actually eat, which grows in the forest or outside.

01:28:03: Dr. Katie Meinhold: Yeah, just outside even, I mean in Germany as well. So it's uh, and i's think it's actually a fun thing to do as well. You get to get connected to nature to Yeah. Makes one. I think it makes one feel better as well. So that, that's, that's one thing. But also if you're really interested in this topic, so we've got, um, we've got

01:28:26: Dr. Katie Meinhold: big research projects. We've also got smaller research projects, so if you, you can also think about, um, um, doing your thesis in this area as well. So we try to advertise opportunities on our website, um, or also just a, yeah, approach, approach us and see if there's a topic you're interested in to, to write a thesis about.

01:28:48: Dr. Katie Meinhold: Um, a smaller project, a lot of food, I mean, life science is the obvious category, but you can also look at it from different angles. Um, so, um, in the, in the

food systems group, there's also a lot of professors involved from other faculties. Um, I think, yeah, we know we've got people from all faculties who are interested in doing food system research that in then yeah, if you're more interested than from a

01:29:13: Dr. Katie Meinhold: technology side of things there's also possibilities there. So, um, I would suggest you can just go see who's interested in this topic from also our website and can directly contact the professor you, you'd like to, um, work with or, yeah, and see if there's an op opportunity.

01:29:33: Hari: Lesson number six:

01:29:39: Hari: no water, no food.

01:29:40: Stephan Hanf: Uh, food is also

01:29:41: Stephan Hanf: things that you could could drink or can drink, right? Mm-hmm. So is there something that's sustainable about that?

01:29:49: Hari: Well, um, I went to Kamp-Lintfort to our, our sibling campus over there and spoke to Professor Ute Hansen, who is also part of the research, uh, center.

01:30:02: Hari: And um, she has a background working in legislation for the European Commission. So, and she's also a biologist, so she's quite diiv diverse in her, in her credentials.

01:30:11: Prof. Dr. Ute Hansen: I was working for the European Commission, that's why I'm interested in ecology, environmental monitoring, biology, but also with respect to legislation.

01:30:21: Prof. Dr. Ute Hansen: Hmm. And policies, uh, development and strategies. And that's why I'm interested in a broad range of topics

01:30:31: Hari: When

01:30:31: Hari: it

01:30:31: Hari: comes to her research with the Food Systems Research Center, it's water

01:30:35: Hari: quality.

01:30:36: Prof. Dr. Ute Hansen: So, um, here I'm, my research topics are mostly related to water management, and water is a very important resource.

01:30:45: Prof. Dr. Ute Hansen: No water, no crops. No. No food. It's, uh, so I'm trying to cover a bit, uh, the topics related to water management and this, uh, in this research center.

01:30:58: Hari: And

01:30:59: Hari: it's interesting because I mentioned three main sub-themes of research, right? Agroforestry, forest products and insects, but all of them have something in common, which is water.

01:31:14: Hari: And uh, professor Dr. Hansen said if there is no water, there are no crops. And so water quality is important. How does your research, um, contribute to the bigger picture of, um, sustainable foods? Like we know that, okay, we need the water for foods, but which, uh, where, where does the sustainable sustainability aspect

01:31:34: Hari: come in?

01:31:35: Prof. Dr. Ute Hansen: Yeah, the sustainability aspect. Um, sustainability is not about. Protecting nature. It is about the use of resources. Sustainability is defined as using resources in a way that also future generations can use this resource, and that's why it's very important to take care of the resource water, and that is why it's so important for all aspects of sustainability.

01:32:07: Prof. Dr. Ute Hansen: It's a general assumption, or it's known that in general there is more water available than used. We have more precipitation, let's say rain, hail, snow, uh, this is higher than the total evaporation and transpiration. Uh, so the loss of liquid water to the atmosphere, uh, this holds true at the global level also for Germany.

01:32:32: Prof. Dr. Ute Hansen: But the problem is that there's a certain variability. This is not always like that and not everywhere. So there's a variability. For example, the lower Rhine region, uh, faced, uh, several use of very low precipitation. It was much lower than normal. It was less than half per year. And there's evidence that this variability

01:32:55: Prof. Dr. Ute Hansen: has been

01:32:56: Prof. Dr. Ute Hansen: increasing due to global change, and it's assumed that it will increase further.

01:33:04: Prof. Dr. Ute Hansen: This can lead first to that rivers are drying out. And that happened in several cases around here. This means that more water is needed for irrigation in agriculture. This means also that the flow of the water is lower. And if you have the same discharge of, uh, let's say pollutants and you have a lower natural flow, the concentration of the substances increase.

01:33:31: Prof. Dr. Ute Hansen: And this can lead to problems. Like, for example, what happened to the Oder River because, uh, the discharge of mining water, water pumped out of the mines was the same, but the flow was lower. And, uh, then there was a high salt concentration in the river water and algae, which usually grow, uh, not in fresh water systems, but uh, in salty water, they became dominant and they produced a toxic substance.

01:34:00: Prof. Dr. Ute Hansen: So all these different, um, Let's say processes, they influence each other. And, uh, that is a very interesting research topic. And there is a, a need for research. Why is research important? Uh, to understand these processes, to, to, to find out which data we will need in future, what other thinking we have to develop.

01:34:25: Prof. Dr. Ute Hansen: And that is the, it's a challenge and this has to be done together with the experts in the region, uh, working on water management. And this is what we do. We work closely together with the Wasserverband, it's called Wasserverband, that are the, it's kind of, um, organization, which is, uh, Getting money from the municipalities and the industry for first taking care that wastewater is treated.

01:34:58: Prof. Dr. Ute Hansen: Second, that groundwater and other water resources are kept clean. They are responsible for monitoring, collecting data, controlling the pollutant concentration. They are also protecting against floods. And yeah, together with this organization we, we try to, to research around the future challenges in water management,

01:35:25: Hari: the problems that we are facing, especially when it comes to sustainability, are pretty serious and have very strong long-term effects.

01:35:32: Hari: But in, in, in, uh, in terms of, um, your research area, if no change takes place and if the systems keep going on the way they have been for many years, what would happen?

01:35:43: Prof. Dr. Ute Hansen: Oh, it's difficult to predict. The water shortage will be a, a big problem. Floods will be a big problem, and these problems will increase.

01:35:51: Prof. Dr. Ute Hansen: So, uh, all processes of agriculture sustainability will be less predictable. They will, we will have surprises. We will be surprised all the time. Um, I, I think it

would be very important to look at sustainability changes, long-term trends, not just by thinking about, but also looking at data.

01:36:15: Hari: So

01:36:15: Hari: sustainability is not about protecting environment.

01:36:18: Hari: Um, sustainability is about using resources, right? And, uh, I think that goes together with everything else that everyone else was saying because they were talking about reusing resources for future generations. It's all about future generations, but environmental protection also plays a big part because, uh, we benefit from stable

01:36:39: Hari: ecosystems.

01:36:39: Prof. Dr. Ute Hansen: So sustainability in German, German language, it is "Nachhaltigkeit". And that has been invented in 1760 by, um, forestry management because that time there were no forests left in Germany because they had to use wood for everything, for burning, uh, for industry, for houses, whatever. So they found out we have, we can, we have to grow forests, we have to manage that, and we should use only as much wood as is growing per year.

01:37:15: Prof. Dr. Ute Hansen: But this idea. How now we see sustainability includes that we protect biodiversity because the biodiversity is a resource. Biodiversity is a resource because in many aspects, uh, just to have, let's say if we need a variety of a plant species having a good yield, even at low water, uh, availability, we need these genetic variability and for ensuring that there is a genetic variability and natural resources, we need the biodiversity. It, so the biodiversity and protecting nature is also seen as a resource.

01:38:00: Prof. Dr. Ute Hansen: But the general idea is about using this research,

01:38:03: Prof. Dr. Ute Hansen: these resources.

01:38:05: Hari: So if there were species, uh, for example, that serve absolutely no purpose to human consumption. So then is, is it true that, um, biodiversity conservation efforts will sort of like more or less not pay attention to those species and only focus on the ones that we actually would need?

01:38:23: Hari: Or how, how does that

01:38:24: Hari: work?

01:38:24: Prof. Dr. Ute Hansen: We have an advantage If ecosystems are stable, we have an advantage if, um, the, if there are species remaining, if, if, if there is less extinction, we have an advantage of that because, um, an instability of ecosystems, uh, would, can yield, can result in very fast changes in the communities.

01:38:53: Prof. Dr. Ute Hansen: And then mm, suddenly something's missing we never thought about. If there is a system on which the river has a flow and the bees, uh, survive, the system has a certain stability, there are processes, they are all interconnected and they have a certain stability against, uh, impacts from outside. But, um, if stability is impaired, then um,

01:39:23: Prof. Dr. Ute Hansen: it's also for us, it's a big problem.

01:39:26: Prof. Dr. Ute Hansen: There are problems we never think about. You have no idea.

01:39:35: Stephan Hanf: After exploring all the different science projects and interviews you had with the leading scientists, what is sustainability for you now?

01:39:45: Stephan Hanf: How would you define it?

01:39:47: Hari: Well, my definition would be sort of a combination of all their different definitions. Sustainability is about managing resources for future generations so that our species can continue to exist.

01:40:01: Stephan Hanf: What's one lesson you learned?

01:40:03: Stephan Hanf: One lesson

01:40:03: Hari: I learned is, do you know this phrase, no man is an island?

01:40:07: Stephan Hanf: Mm-hmm.

01:40:07: Hari: Yeah. So we're all in this together. All our actions are going to affect all of us. It's going to affect us in many different levels. So what I've learned is that we need to cooperate, we need to do our part and pull our own weight for the, for the bigger goal of having a planet that future generations can thrive in.

01:40:28: Hari: Alright.

01:40:29: Stephan Hanf: Hari, you mentioned in the beginning the survey. I think now it comes back into the picture, right?

01:40:34: Hari: Exactly.

01:40:35: Hari: So for everyone who filled

01:40:37: Hari: out the survey before listening to this episode, um, you'll realize that I asked you some questions about sustainability. So right now you should go back to that email and click on the second link for another survey so that we can measure more accurately whether or not they've actually learned something

01:40:50: Hari: from this episode and whether we have contributed to a better understanding of sustainability among our listeners.

01:41:08: Hari: Thank you for listening to the How to Hochschule Podcast. We hope you enjoy the show and feel free to follow us and recommend us to your friends. If you have any thoughts or suggestions or just wanna let us know how you like the episode, please don't hesitate. Take courage and do reach out to

01:41:21: Hari: us at podcast@hsrw.eu.

01:41:24: Hari: We're always looking for

01:41:25: Hari: ways to improve and we appreciate your feedback. Also,

01:41:28: Hari: be

01:41:29: Hari: sure to check out our show notes and links and more information on today's topics and guests

01:41:33: Hari: next time

01:41:34: Hari: on the How to Host Podcast.

01:41:36: Stephan Hanf: I mean, you want the Best Idea Cup, but can you explain how it looks like and how, how it works?

01:41:40: Stephan Hanf: More or less? Is it possible?

01:41:42: Hari: Tune in next time as we discover how to innovate at the most international university in Germany. Thank you very much for joining us today. I'm Hari.

01:41:50: Hari: This is the How to Hochschule podcast. We are looking forward to having you back

01:41:53: Hari: next time. Tschüß!