**Focus Group-20250312\_170559-Grabación de la reunión**

March 13, 2025, 4:06PM

25m 13s

 **Joana Saraiva De Barros Alves Caseir** 0:03  
Recorded and.  
Yes. So where you can begin?  
So you say your name and then you consent to being recorded.

 **René** 0:15  
Hi, I'm Renee Nissan.  
I consent to being recorded.

 **Joana Saraiva De Barros Alves Caseir** 0:18  
OK.  
And fei?

 **Feifei Cao** 0:23  
Hi my name is Fefe and I consent to be recorded and.  
I can present myself.  
Or later.

 **Joana Saraiva De Barros Alves Caseir** 0:34  
No, definitely you can present yourself perfect.

 **Feifei Cao** 0:35  
Yeah.  
So I'm a water specialist from IGRAC, from the International Groundwater Resource Assessment Center.  
We are UNESCO and WMO Center working groundwater.  
Data sharing and research and we are based in Delft.

 **Joana Saraiva De Barros Alves Caseir** 0:58  
OK.

 **Feifei Cao** 0:58  
And happy to contribute to your project.

 **Joana Saraiva De Barros Alves Caseir** 0:58  
Thank you.  
Oh, thank you.  
We're very happy you're here too.  
It's very useful for us and Renee, would you like to introduce yourself?

 **René** 1:08  
Yeah, I'm a PhD student at Wageningen the university and I am trained as a social scientist.

 **Feifei Cao** 1:14  
Mm hmm.

 **René** 1:19  
But now I work at the Chair Group of Knowledge Technology Innovation in WU and I'm obsessed with all kinds of problems that PFAS create in various practices and what technicians, engineers, but also businesses.  
And try to solve or tackle otherwise these problems.

 **Joana Saraiva De Barros Alves Caseir** 1:38  
Wonderful. We will now introduce ourselves too.  
So I am Joanna.  
I am a computational social science student.  
And this, yes, my people here too are also computational social science students.  
Would you guys like to also introduce yourselves?  
Yes, my name is Piya.  
I'm from Lithuania.  
I'm the one that you have been in contact with.  
And my name is Iliana.  
I'm from Colombia.  
We haven't talked much, but I'm very glad to meet you.  
So do you guys understand how focus group works more or less? Or would you like me to explain a bit more in detail?

 **René** 2:20  
Feel free to explain how you're going to do it.

 **Feifei Cao** 2:20  
M.

 **Joana Saraiva De Barros Alves Caseir** 2:23  
OK.

 **Feifei Cao** 2:23  
Yeah.

 **Joana Saraiva De Barros Alves Caseir** 2:23  
So basically the idea is for us to have a conversation where you guys tell us your perspectives on PFAS and the different subjects. We'll bring up four different topics and we will be asked every time there's to keep track of time; we will let you know one time for the first topic is done and we'll move on to the next one so that we also don't take up too much of your time.  
So as you know PFAS is a multifacet topic/issue and we really just want to understand your perspectives on it.  
So we will begin by asking you if you were explaining the issue to a 10 year old, how would you do it?  
Like just quickly, like a two-minute explanation. How would you explain it to a 10-year-old?

 **René** 3:18  
It's quite difficult.

 **Feifei Cao** 3:20  
Yeah.  
Tough question.

 **Joana Saraiva De Barros Alves Caseir** 3:23  
It doesn't have to be in a lot of detail, just certain.  
Like what are the key things that pop into your mind to explain?

 **René** 3:32  
Hey so we have.

 **Feifei Cao** 3:32  
Umm.

 **René** 3:33  
Yeah, I know. Fei Fei, you go.

 **Feifei Cao** 3:34  
Yeah, go ahead. Go ahead.  
Really. Yeah, go ahead.

 **René** 3:36  
OK.  
Yeah. So we have these chemicals that are that are so seductively useful that they've popped up everywhere.  
Not everywhere, but on a lot of products that we use in our everyday, but also in a lot of chemical manufacturing.  
And they have turned out to be not just seductively useful, but also incredibly toxic.  
And they accumulate in bodies and they're quite mobile in the environment so that they're hard to track and that creates a number of in commensurable problems in a vast number of practices.  
Like for example wastewater treatment, where our poop goes.  
Because I'm explaining this to a 10 year old.

 **Joana Saraiva De Barros Alves Caseir** 4:19  
For 10 years.

 **René** 4:22  
And it's hard to get them out again out of the water.  
And the problem is that many other beings use that water to live.

 **Joana Saraiva De Barros Alves Caseir** 4:31  
Perfect, fei fei, would you have anything to add?  
Would you like to add some things to it?

 **Feifei Cao** 4:36  
I think what Rene said is very nice and I would mention maybe a few examples like so you know PFAS. You can find it on your on your raincoat, you wear your raincoat.

 **René** 4:44  
Yes.

 **Feifei Cao** 4:48  
It might contain PFAS. You see some makeup products.  
They may also contain PFAS.  
You know some.  
Daily products we use even the cooking things, the pan, the cooking coatings.  
So they are extremely poisonous not only to human but also to the environment, to the ecosystem and other livings around us, yeah.

 **Joana Saraiva De Barros Alves Caseir** 5:19  
Wonderful. So you guys already kind of started touching upon the topic for my next question, which is what are the key challenges with PFAS; this time, you're no longer explaining it to a 10 year old, so you can go into more detail, but yes, So what in your perspective, what are the key challenges and what are the challenges that need to be focused on when dealing with PFAS?

 **Feifei Cao** 5:43  
I can start.

 **Joana Saraiva De Barros Alves Caseir** 5:44  
Yes.

 **Feifei Cao** 5:45  
I can provide some perspectives from water science, because PFAS is in most cases a very stable chemical component and which means that's also why they called PFAS the forever pollutants because it will basically last forever in the environment and this is one of the main challenges because it will enter into the soil, leaching into groundwater, going to surface water. And finally will affect, I mean the drinking water system and also the ecosystem.  
Another thing is, for PFAS, now there is not an ideal solution for treatment in water, for example. And plus it's toxicity, of course.

 **Joana Saraiva De Barros Alves Caseir** 6:54  
Mm hmm.

 **Feifei Cao** 6:55  
Yeah, I think that's the main challenges I'm thinking on the 1st thought.  
Yeah, maybe later if I have others, I can add it.

 **Joana Saraiva De Barros Alves Caseir** 7:03  
Mm hmm.  
Yes, at any point you have any things you'd like to come back to. You can also mention them later.  
So no, you don't have to be concerned about not knowing the answer to everything in the precise moment we ask.

 **Feifei Cao** 7:10  
Yeah.

 **Joana Saraiva De Barros Alves Caseir** 7:15  
And what about you, Renee?  
What would you consider some of the key challenges?

 **René** 7:18  
Yeah, it's that you say some of the key challenges because of course I research so many.  
Oh, sorry, can you still see me?  
Yeah. OK.

 **Joana Saraiva De Barros Alves Caseir** 7:25  
Yes.

 **René** 7:26  
Because I researched so many different practices and the problems there is that PFAS is so useful and then, the regulation is the problem. Meanwhile, for regulators, the problem is that they can only regulate chemicals, not practices. So they regulate chemical by chemical or group by group.  
But then some of the applications might be, I don't know, deemed essential. And then and then it's hard to regulate the chemical and the use. So they have to decide.  
So it's a regulatory issue. Then again in treatment, as Feifei said, it's quite hard to get out of the water. And then there's environmental science or toxicology where they have problem, a problem even measuring PFAS.   
Yeah, it depends a bit.

 **Joana Saraiva De Barros Alves Caseir** 8:17  
Of course so.

 **René** 8:19  
Thank you.

 **Joana Saraiva De Barros Alves Caseir** 8:20  
Of course, say the really does depend.  
And do you think what are some of the key techniques you have found that in your researches that you think would be the most efficient, they don't have to be full blown techniques, but some ideas that you think are useful and when thinking about how to solve this issue.

 **Feifei Cao** 8:44  
Oh well, I can tell one example from us because you know, for dealing with contamination and the pollution. The reason of awareness and knowledge is really very important. So that's why we share data on PFAS pollution. For example, we share the monitored concentration of PFAS in in groundwater and we gather, for example information and data from other researchers or other institutions and, you know, make this information widely, broadly spread.

 **Joana Saraiva De Barros Alves Caseir** 9:25  
Mm hmm.

 **Feifei Cao** 9:26  
This is very important to to let the public know about the occurrence of the contamination and also the impact influence.

 **Joana Saraiva De Barros Alves Caseir** 9:38  
OK.

 **René** 9:39  
And what we found in our research is that the public are quite scared of PFAS and that the information doesn't really help them with that feeling.  
And Social scientist.

 **Feifei Cao** 9:51  
Yeah.

 **Joana Saraiva De Barros Alves Caseir** 9:51  
Correct.

 **René** 9:53  
It's a it's not.

 **Feifei Cao** 10:03  
Hmm.

 **René** 10:03  
If you have a garden in Dordrecht, they tell you, yeah, you can't eat your vegetables anymore, or you shouldn't.  
I mean there's no legal mandate not to, but they tell you not to.

 **Feifei Cao** 10:11  
MMM.

 **Joana Saraiva De Barros Alves Caseir** 10:11  
Mm hmm.

 **René** 10:14  
There's no information available on what else you can do with your garden.  
You have to kind of get creative or just keep eating your vegetables because you might really like that, same with chickens.  
So I wonder a bit of information would be my sort of go-to golden bullet it's.  
So what I learned from the wastewater engineers that I speak to.  
Is that they're really very skeptical of anyone who says there is a solution to this issue because solving is this mode where you promise a future where there's no problem anymore and this is what the wastewater engineers really tell me isn't possible right now with the tech.  
They're quite pragmatic or realist, right?  
They can do stuff.  
They can.  
I don't know.  
Use nano filtration, which is a very successful technology.  
This is more for drinking water than for wastewater, but they create a waste stream, right?  
They create a clean stream and a waste stream and.  
And they have to deal with the waste stream. That's.  
In regulation, it's quite unclear if they're polluting the water kind of legally, if they use that registry same as carbon, they produce CO2 if they use activated carbon.

 **Joana Saraiva De Barros Alves Caseir** 11:14  
OK.

 **René** 11:21  
So.  
The wastewater engineers, who were public employees, they're quite clear on, there is no solution currently as Fei says.

 **Joana Saraiva De Barros Alves Caseir** 11:32  
Mm hmm.

 **René** 11:32  
Meanwhile, there's a lot of businesses that say we can solve water.

 **Joana Saraiva De Barros Alves Caseir** 11:36  
Yes, I believe I could take.

 **René** 11:37  
But that's a bit sneak on.

 **Feifei Cao** 11:41  
Yeah.  
Yeah. I mean for, for the for the solution, I mean for treatment.  
Yeah, there are technologies, for example, in the drinking water treatment systems to deal with PFAS for example ion exchange.  
But the challenge is that that would be very expensive.  
So there are, you know, trade-offs between.  
Between this this issues and also-I just mentioned that we should make the data and information-open to the public.  
And understand what you said, Renee. Like sometimes the grand public might be panic about the information, but still, I mean, people should know if you grow your vegetables in your garden, that may contain PFAS, you should know and definitely avoid that; and also the sharing of data is not only for the grand public, it's also a measure to put pressure on the on those industries, on the manufacturers to put pressure on them to find solutions and do something about this.

 **René** 13:04  
Yeah.

 **Feifei Cao** 13:05  
Yeah.

 **Joana Saraiva De Barros Alves Caseir** 13:05  
On that on that issue, how do you think regulations play into this? Do you think this is one of the solutions in terms of putting pressure on these manufacturers also?

 **René** 13:06  
Can I?

 **Joana Saraiva De Barros Alves Caseir** 13:13  
I would just like to add, feel free to ask each other questions if you have any. If you want any clarification from one another.

 **Feifei Cao** 13:22  
Yeah, absolutely.  
I think regulation is definitely needed and should be clear and detailed for the different sectors to follow.

 **René** 13:34  
Yeah.  
I'm still stuck on the last part and I am quickly gonna respond.

 **Feifei Cao** 13:39  
Yeah.

 **René** 13:42  
Cause of course, I'm not saying not to inform the public. I'm saying to inform the public differently.

 **Feifei Cao** 13:44  
Hmm.

 **René** 13:45  
It's if you give them data where the problem is, they still have a problem. If you give them data where the problem is and ways to deal with that problem actively, they respond.  
That's a different mode of engagement.  
But we can talk about that another time.  
Regulation. Yes, of course.  
So in last November I went to a conference of the European coatings industry.  
So that's people who put stuff on other stuff to make it shine or something.  
And the environment doesn't figure at that conference.  
It's really our concern-my concern-with environmental pollution.  
Doesn't emerge at this conference. It what emerges as a concern is regulation. Without regulation, you can't get these companies to act.

 **Joana Saraiva De Barros Alves Caseir** 14:30  
Mm hmm.

 **René** 14:33  
Why would they act?  
I mean, they're not, they're not.

 **Joana Saraiva De Barros Alves Caseir** 14:38  
No.

 **René** 14:39  
They're not out for the good. They're out for a bottom line, which I think is, I mean.  
How they're set up?  
They might have private as private citizens, different concerns with the environment, but as employees they are concerned with making money.  
And I spoke today to this guy who sells water filters and activated carbon, and he said, yeah, we want regulation.

 **Joana Saraiva De Barros Alves Caseir** 15:06  
Yeah.

 **René** 15:06  
Otherwise we're working for a bad company if we don't regulate our company then then they're not going to get better.  
So please regulate. Meanwhile, the CEO says they don't want regulation and there's a lobby and everything, but it's really at different levels at the company. This idea of regulation falls on very different years. And then the engineers are also very excited to be regulated because that means.

 **René** 15:25  
They can compete again.

 **Joana Saraiva De Barros Alves Caseir** 15:27  
OK.  
That's very. That's interesting perspective. Very also interesting that you mentioned that because for us one of our main goals for this for this project is to understand how to motivate companies to have this kind of change and take these into account.

 **Feifei Cao** 15:28  
Yeah.

 **Joana Saraiva De Barros Alves Caseir** 15:43  
So we were thinking how would you see your work with PIFAS evolve in the future?  
What is the what are? What are you? Look in the new like in the next 20 years?  
How do you see PFAS evolving in the topic of it changing?

 **René** 16:04  
Yeah, someone I wish someone could tell me.  
And I went.  
Oh yeah, yeah, I went.  
I went to also a conference of regulatory chemists last year and.  
They're quite feeling quite dire about the upcoming PFAS regulation, and I think a lot of a lot of, at least in Europe, hinges on that. Because the regulation is also a way to group PFAS into subgroups, right?

 **Joana Saraiva De Barros Alves Caseir** 16:33  
Mm hmm.

 **René** 16:34  
If you exclude Flouropolymers, which are these long chain.

 **Joana Saraiva De Barros Alves Caseir** 16:38  
Mm hmm.

 **René** 16:39  
It's a very stable chemical.  
Which industry says can't enter cells which?  
If the regulation excludes those, then that'll be quite consequential for how other regulators elsewhere respond, how industry responds. And I think a lot of that. The answer to that question hinges on; Feifei might know way more than I do.

 **Feifei Cao** 17:02  
This is a tough question. I want to mention another project called Forever Pollution Project. It's a quite big project and they have done a very nice job.  
So on the first part, they did the forever pollution where they gathered all the information on PFAS and they published. And now they're moving into another stage called the Forever lobbying project. So yeah, and they mentioned that if we do nothing for PFAS now, it will cost Europe in the next 20 years like more than €2 trillion to deal with this issue, if we do nothing.  
But it's not easy because all the industries, I mean, they have their own lobbying efforts.

 **Joana Saraiva De Barros Alves Caseir** 17:46  
Mm hmm.

 **Feifei Cao** 17:52  
Try to.  
I don't know negotiate with the regulations or the timing for longer transition time. Whatever. But I think it's the regulation will really play a big role in in the future and and we'll see in the next 10, 20 or 30 years how it goes.  
But it's difficult to tell.

 **Joana Saraiva De Barros Alves Caseir** 18:20  
But even in the in the context of research, where do you think research is going in terms of PFAS? Where do you think what is the next big area?  
That people are starting to look at, like, how is it evolving the research surrounding it?

 **Feifei Cao** 18:35  
I think I think there are. For example, in the water field.  
I know that there are lots of efforts working on the treatment part and also I think it's very important to work on the innovative products as alternatives for PFAS, for example. So yeah, I see these two aspects, which involves a lot of efforts already.  
And also in the future, perhaps.

 **René** 19:12  
Yeah, and this, I mean in my field, not a lot of research on PFAS to begin with.  
I think we're the first projects in the social sciences to get this kind of funding.  
But I think sort of more natural, scientific or kind of regulatory science? Is now starting to to prioritize different chemicals because they know they have too many to regulate.  
So there was this workshop last year by the European Union on which chemicals to prioritize and some PFAS are among the chemicals they've identified as chemicals of very high concern. But not all of them.  
I can try to come find the name sort of in my head or in my e-mail, and I can forward you that, but it was a workshop.

 **Joana Saraiva De Barros Alves Caseir** 20:15  
OK.

 **René** 20:17  
Is it persistence?  
Is it something else?  
Is it all three?  
And they haven't figured this out yet.  
It's high time they do, but it's they haven't.  
And then the next step would be ways to remove it from all kinds of different media.  
So water is one, but water isn't actually ‘one’. There's drinking water, there's waste water, there's industrial wastewater, there's household.  
You know, and then there's soil and then there's air and all these different technologies have different requirements. So I think there's also going to be a lot of,  
when it comes to regulatory science, a lot of kind of trialing which technologies work and which don't.  
So the to the extent that the European public also is willing to buy them and pay tax money for them.

 **Joana Saraiva De Barros Alves Caseir** 21:02  
Of course.

 **René** 21:03  
Yeah.

 **Joana Saraiva De Barros Alves Caseir** 21:04  
It's very I like to say that the meeting will end at the time limit will end like in 5 minutes.  
So OK, let's restart.  
Oh, so OK.  
We have to restart.  
I'm so sorry to interrupt it.  
We were not.

 **René** 21:17  
No good.

 **Joana Saraiva De Barros Alves Caseir** 21:18  
This was gonna happen, OK?  
So how are you gonna do it?  
It's the same link.  
Is this underlined a new one?  
Yeah. OK. Perfect.  
So we'll send a link again to our e-mail. It will.  
So maybe while you guys are taking care of that, we will continue. And then as soon as we have the link, we'll switch.  
Is that OK?  
Or do you already have the link?  
Welcome to the program.  
OK.  
So anyways, while they're trying to figure this out, I wanted to also kind of ask you guys a bit about what do you think is.  
So OK, so currently there's a lot of tools and strategies as you were mentioning of what is to come in the PFAS world.  
But what about some existing tools that you think are very are useful in motivating reduction of PFAS and emissions reducing PFAS's emissions?  
If there are any, you can think of.

 **Feifei Cao** 22:25  
Hmm.

 **René** 22:31  
And you're thinking of technologies?  
I presume.

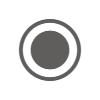
 **Joana Saraiva De Barros Alves Caseir** 22:34  
Doesn't have to necessarily be technology, just resources. So it could be informative resources. It could be data, something, anything that you think kind of motivates this kind of reduction of PFAS, but also gives techniques maybe or even technology wise?

 **René** 22:55  
Yep.  
I heard this really interesting thought from someone at the Coatings Conference and I don't know if this qualifies as a resource, but I think it sort of does that.  
The idea is really powerful If you tell people in the sort of that industry that PFAS are totally over engineered, they're way too good at what they do for the purposes that we use them for. And we in that case, the coatings industry, so he had this example of they make posters, and in front of construction sites.  
That the people who do the construction can advertise and then they want them to be water repellent so that they can have leave them hanging for six weeks instead of until the next rain fall.

 **Joana Saraiva De Barros Alves Caseir** 23:40  
Mm hmm.

 **René** 23:42  
They use PFAS for this water repellency, which are quite last quite a lot longer than six weeks.  
And they said, well, we need to think about do we need everything that PFAS offer and then and then that opens for their company that's offered.  
A lot of pathways of looking for alternative chemicals that are in PFAS also aren't as persistent because they started thinking, well, we don't need persistence for 1000 years, we need persistence for six weeks.  
And that I don't know if that's a resource.  
It's also not shared anywhere, but he shared this thought and it worked for a lot of attendees at this conference.

 **Joana Saraiva De Barros Alves Caseir** 24:20  
It's definitely a really interesting thought and I think it's something we should definitely consider as well.  
And you have the link then OK, you should have just received the link. So we will switch over to the other one. Thank you.

 **Eliana Vitolo Sosa** stopped transcription