Rating India's Climate Action Plan: Going Beyond the Headlines

Guest: Ulka Kelkar - Director, Climate Program at the World Resources Institute India

Host: Shreya Jai

Producer: Tejas Dayananda Sagar

[Podcast intro]

Welcome to the Season 2 of The India Energy Hour podcast! The India Energy Hour podcast explores the most pressing hurdles and promising opportunities of India's energy transition through an in-depth discussion on policies, financial markets, social movements and science. The podcast is hosted by energy transition researcher and author Dr. Sandeep Pai and senior energy and climate journalist Shreya Jai. The show is produced by multimedia journalist Tejas Dayananda Sagar.

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[Guest intro]

Narrator:

This year marks the starting line for India's energy transition plan, in line with its Net Zero ambitions. The country has made a range of ambitious announcements starting from renewable energy addition to assertive stand on global climate platforms. Challenges of balancing energy needs versus climate commitments aside; India's energy transition would need to also balance economic needs versus social obligations.

We talked with Ulka Kelkar, Director, Climate program, World Resources Institute India to assess the climate action plan of India and what lies ahead. An economist by training, Kelkar has a rich experience in climate change research where her work has ranged from field studies in rural areas to designing state action plans. She is one of India's most respected voices on low-carbon and climate-resilient economic planning.

Reading suggestions:

https://www.wri.org/research/pathways-decarbonizing-indias-energy-future-scenario-analysis-using-india-energy-policy

https://www.wri.org/research/sustainable-development-impacts-renewable-power-insights-three-indian-states

https://www.wri.org/just-transitions/snapshots

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[Interview begins]

Shreya Jai: Hi Ulka Kelkar! Welcome to The India Energy Hour Podcast! Happy New Year!! Thank you for joining us on the first episode of our season three, which kicks this year. We will be discussing how has the year been in the past year for India's climate sector. What are we looking at for the coming year as well. And no better person than you can explain that. So thank you again for joining us!

Ulka Kelkar: Thank you so much, Shreya! It's such a pleasure to be with you. I'm a big fan of your podcast. I'm just very delighted to be with you, especially at the beginning of this new year! I think a new year always gives us hope and determination to take on new resolutions, changes of behavior and hard work, diligence, all those things. So hopefully, we will apply all of that even to the sector that we work in the environment, climate change, and sustainability. So very happy to be chatting with you this morning about what lies ahead.

Shreya Jai: That's great! Thanks again for your compliment. Let's start with you. If you can describe your journey, professional mostly. What did you study? Where are you from? You're an

economist who's working in the climate space, and I believe when you would have started out, that must have been quite unique. It still is. Can you tell us about your journey?

Ulka Kelkar: Sure. I think in my case, my interest in climate change started very early. My father is a meteorologist. That is, meteorology is the study of the weather. So he was a practicing meteorologist doing weather forecasting. And his PhD from the 60s or 70s, well before I was born, was about something called Outgoing Long-wave Radiation (OLR), which is basically about the greenhouse effect. So even when I was like, 10 years old, I didn't understand what these words meant. But I did know about global warming at a fairly early age. When I finished school and decided to study, I didn't study science, I studied economics. But somewhere in my Masters, I got the opportunity of studying environmental economics, which is really the application of economics approaches to environmental issues, the issues of resource use, natural resource use. And when I got the task of doing some term paper, I went to the library and found these very exciting new books about climate change economics work by William Nordhaus and others, this was in the late 90s that I would have looked at these books. After finishing my masters, I got recruited into TERI (The Energy and Resources Insititute) which was at that time, one of the few institutions in India working on issues of climate change. And I really learnt on the job from a range of mentors, seniors. And what I found about climate change, particularly at that stage, the early 2000s, was that it was a very interdisciplinary field. It had economists, geographers, historians, philosophers, so many people talking about the ethics of climate action, about mitigation, adaptation, all of these words that we use. Really, all aspects of climate change. I worked for several years, very much with interdisciplinary teams, often worked with anthropologists who would actually teach me how to do fieldwork in villages, working with engineers, of course, looking at issues of renewable energy technologies. And really it's been a learning journey. For the last four years. I am in WRI, the World Resources Institute in India, where again, I've had the opportunity to work with systems dynamics people, looking at models of pathways for the Indian economy of climate action, low carbon development, in a way that also looks at what's the effect on the economy of this kind of climate action. So that's really been the journey so far, and hopefully some more to come.

Shreya Jai: Just very quickly, the years that you're talking about, when your career build up to moving into the environment and climate space, was also, I guess, the time when the climate was becoming a mainstream topic. Can you talk a little bit about that? How the attitude of say, economists or scientists,... scientists obviously were working in this, but other mainstream sectors, such as economists or corporate planning or even policy-making, started mainstreaming climate change in their thinking. When would you say that happened? And what were the triggers, if there were?

Ulka Kelkar: Yeah, no, you're absolutely right. I think 20 years ago, climate change was very much a niche issue. At that point, it was the beginning of the opening up of the Indian economy. So the kinds of challenges that we are seeing in terms of overuse and overconsumption of natural resources, was only at an early stage. At the same time, even the opportunities of implementing low-carbon technologies was really very nascent at that time. So I think the first major kind of wave, I would say, if I could use that word in a benign context, we're so used to using it as a COVID-19 context only. But the first wave, I would say, would be around the time

that the Clean Development Mechanism, the CDM, became a reality. And in the early years, with Indian companies, particularly smaller renewable energy companies, there was this hope that it would provide finance, that it would lead to new renewable energy technologies being implemented. And it did happen to quite an extent, the early wave of wind energy, biomass, some amount of solar as well. And generally, the fact that state governments, companies, consultants, and everybody got aware of this language of the Kyoto Protocols, the CDM, carbon credits, and climate finance. Unfortunately, as we all know, now that we did not last very long. The kinds of prices that we were hoping that carbon credits would get did not materialize. And a lot of these credits were generated, but not sold at good prices. But it still led to a kind of increase of recognition of private action. After that. I would say I've seen a really big change since the last two or three years with the IPCC - Intergovernmental Panel on Climate Change 6th Assessment Report doing a very good job of outreach, of laying out the urgency of the issue, and also of laying out how there are new opportunities. Like, for example, it made the point that the cost of solar technology has fallen by 85% in the last 10 years, or the cost of wind has fallen by 55%, half in the last 10 years. So, in a way, what the IPCC does is it reviews what is happening in the world, right? It reviews the literature. So it's always sometimes a little bit of a step behind, because it has to review literature that has already been published. That literature may be about research that was done a few years ago, which may be about findings from a few years before that. But what the IPCC does, in a very good way is really amplify these messages in a structured, very concise way. And the kind of outreach that we saw in a year when there was a lot of extreme climate events happening, that has, I feel, led to a lot of developments in the last 2 or 3 years. The UK presidency of COP26, also, I think, was very strong with outreach on creating a conversation about these net-zero targets. And these days, I think you can't open a business newspaper without seeing 10 stories about clean energy, electric mobility, green jobs and re-skilling, right? So I think it is only now that climate change is almost becoming a mainstream issue. I recognize, as I say this, that because I'm in the field, I want to see this. I don't think if you talk to the common person on the street, they will still say it's mainstream. But often, what happens is that certain issues become more common without necessarily using the same vocabulary that we use in the field. So even if you're not calling it climate change, but you're seeing extreme weather. Even if you're not calling it low-carbon technologies, but you're getting new jobs in, let's say, electric two-wheelers. We see things happening in the economy that are indicative, that this trend is here to stay.

Shreya Jai: That's a great point. I was thinking to ask you as well, before you touched upon it, that how popular climate change is now in a layman's conversation. But as you mentioned, it might not be in an active way, but in a passive form it is. Engineers are choosing sustainability companies as options. I believe IIM has a course on sustainable development management as well. So it's like a passive development that is happening in this. But I wanted to understand from you, very quickly that there's so much emphasis being put on that climate change should be part of the mainstream, should be part of our drawing room conversation. Is it needed? Let's just start with that.

Ulka Kelkar: Is it really needed? That's a very good question. Perhaps not really. Let's think of it. One of the reasons why we need to make it more discussed is that the younger generation actually already is quite aware of these issues. Fortunately, environmental issues, not just

climate change, but environmental issues have been integrated into the school curriculum now for the last several years. So I think younger people are already quite aware of various aspects of the environment and climate change. They may not know about the solutions. They may know that there is an issue. They may know that there are some simple things that can be done, but they may not really feel that, they may not be able to see what's the big picture that will lead to transformative changes that will fix this problem once and for all. As we have done, for example, with the oz. In college, in universities, as you just mentioned Shreya, there are many people being trained with the skills required to bring sustainability into businesses, into policy making. I think those skills do need to be applied to real changes. Not just a kind of a superficial rebranding of activities, but definitely new technologies. Not just more efficient technologies which will save on resource use, but more game-changing ones like we are seeing right now in some sense with green hydrogen, the beginnings of it for the future. So definitely there is a kind of cohort of new workers who are entering into the job market with these skills. The third is that the communities themselves who are affected by climate change or by actions taken to combat climate change may not actually be part of high-profile conversations in boardrooms, in drawing rooms, or in policymaking circles. But we can't afford to have those impacts become invisible. And that's where I think the media plays a very big role. Who our lives, in some sense have become so urbanized that we may not right now get opportunities to see how the majority of the world lives. I think it was only during the early stages of the pandemic that we actually saw migrant workers in a way that we had turned our eyes away from before. So, the reason why I guess climate change doesn't become a topic of conversation in drawing rooms is maybe not so much for the benefit of people like us who will be able to, one way or the other adapt to impacts will be able to protect ourselves from the worst of the impacts. But to make sure that we don't end up ignoring that, the impacts may be really much more serious for people who we don't encounter in the course of our noble lives.

Shreya Jai: No, I think that's a very wise and interesting perspective to this. And now that we are on the subject, let's start with a broader view on India's action on climate change till yet. Overall, whatever developments have happened. There have been so many schemes that have announced, we have made very ambitious statements on the global stage as well. How would you rate and describe India's action plan on climate change? And when do you think real action began, or has it not started yet? If you can tell us about that.

Ulka Kelkar: I think in terms of action, you always have to see action in the larger context. In some sense, the action in India, I would say, has kept pace with the development of the issue, with the development of the economy. So I think it was around 2008, I think, if I'm not mistaken, that the National Action Plan on Climate Change (NAPCC) was created. Then there were State Action plans of climate change, there were national missions. But it's only very recently that the issue has become much more high profile. I think going forward, it helps to have these national missions which focus attention, particularly on new technologies, or new things that need to happen, or things that need to happen differently. But also what the State Action Plans do is to really try to mainstream, which is, can we look at every scheme, every budget allocation, in a way that climate change is taken into consideration? In a way that that scheme or that budget adaptation doesn't worsen the problem? Does it lead to maladaptation? So in that sense, it's a journey that will never be complete. I mean something that you are seeing more and more of in

the states. You're seeing it from Tamil Nadu, which has announced that every district will have a nodal officer for climate change. We are seeing it in the states like Bihar, which is also looking at a strategy for climate resilience and long-term low-carbon development. That's a very interesting contrast, because on the one hand, you have one of the most developed, most industrialized states in India trying to come up with a greener alternative. And at the same time, you have a state which is very early in its development trajectory, which has historically been very vulnerable, performing poorly on various kinds of development indicators and clearly, even having these development aspirations, trying to see if there is a way to do it that doesn't replicate the story of excessive stress on natural resources. So that's a really kind of,... it's almost like a living lab, you could say. I hope that's not the wrong sort of word to use. Or you could call it a triad of learning by doing. There is no one else, no other country in the world has done this before. We are charting this new kind of pathway, and states like Tamil Nadu and Maharashtra are doing it, being very industrialized, as well as states like Bihar, which are not industrialized and still very agrarian and need to develop. So when you say, what are the actions? When did the action start? I think the action is something that is now really picking up a lot of momentum. It's picking up a lot of speed. And I also feel that compared to the first round of state action plans that happened, say, about 5-7 years ago, this current round of state action plans will actually give people who are preparing these state action plans in the States, much more opportunity to genuinely engage with what do we really mean? What is it that can be achieved? How much budget are we actually allocating? And if they try to mainstream climate into the budget we should not see that as a negative thing. We shouldn't see that what's the additional budget that has been allocated. Otherwise, it doesn't mean anything. We shouldn't really think of it like that. We should think of it in a way that climate is being considered in every scheme, every program. I think that's where we are right now.

Shreya Jai: Maybe that stems from the fact that these states have realized that the amount of economic losses that emerge from not planning ahead for say a climate disaster or the crisis that they face, would be much more than say if they try to ignore it or look at a pitstop solution. Do you think that is the reason? And obviously, the safety of their own communities also makes sense. For Tamil Nadu or Maharashtra? I think it's more of a business case scenario because a lot of investment that flows in from the companies that are there in these states are also moving towards green energy because for them also it makes a business sense because the money that is flowing in globally is flowing-in in these sectors. So it's more of a socioeconomic sense. What do you think? Or do you think there are other reasons at play as well? Especially at the state government level?

Ulka Kelkar: I think there are multiple reasons which are kind of push and pull factors. So you spoke about the industry, about the economy. I think the industry is also increasingly facing international competitive pressures. So Europe for example now has a carbon border adjustment tariff which will directly hit steel industries that are exporting from India. The US also has all kinds of policies. Now for example the Biden government has spoken about wanting to procure, at a federal level, only low-carbon steel, low-carbon cement, low-carbon glass. So any Indian industry that has aspirations for entering the export market in Europe and in the US has to be aware of these and has to make themselves competitive. The second kind of opportunity or a factor is really these domestic options. Solar, green hydrogen these are all being seen as

‘Sunrise Industries’. I think last year the budget speech that the Finance Minister made also referred to these sectors, which includes electric mobility. So definitely there is a kind of ask now from these industries, from the government for support some kind of incentives and subsidies and so on. The third is that the national government itself has made it kind of a centerpiece of their policy. India is now taking over the G-20 Presidency, and climate change is very much something that is seen as a priority issue. And the fourth issue is running from the states, which is that, as you just said, the vast population of these states are potentially vulnerable to climate change. At the first round of state action plans, climate change was specifically about how to adapt, who is vulnerable, which areas are more vulnerable, what makes them so, and how can you adapt. So I think, having identified where the hot spots of vulnerability are it is absolutely essential that there must be some kind of actions to ameliorate that vulnerability. So in the short term, or I would say in a more proximate way, it is adaptation actions that are required. But in a longer-term way, the state or the country can also not go on adding to that problem, right? So the mitigation policies are also required in the long term. So all of these four factors international, national policy, economic opportunities and vulnerability of communities, I think all four of these combine. And on the last, I would say there's this whole issue of the fact that climate vulnerability is not something that is experienced in a separate compartment. It combines with water scarcity, with air pollution, with say, just seeing, for example, congestion on the roads and Urban Heat Island Effect. All of these local environmental and global symbolic factors combine to give us a sense of our well-being or our health. And I think in that way, it is definitely something that now, any kind of sensible policy must take into account.

Shreya Jai: But this is my observation. You correct me if I'm wrong if I look at the broader focus, currently that India has in terms of, if I might say, climate action or whatever plans I see emerging in states or in corporate are mostly mitigation focus. We are focusing on just carbon mitigation as of now. And adaptation is not part of the plan, and not even by the states, which would be in the first line of impact much more than the other, say Maharashtra or the coastal regions and everything. So when now, as you say, that these states are coming out and planning their climate action plans, what financial or socioeconomic model that these states and also the center should be looking at to build a robust climate adaptation plan?

Ulka Kelkar: That's a very difficult question to answer, Shreya because the bias that you have noticed in favor of mitigation is something that we are seeing internationally and is reflecting, in fact, the bias in finance. And there are some very simple reasons for this. Mitigation, as we just discussed, can create new jobs through new technologies, new industries, and it will benefit somebody in the form of lower greenhouse gas emissions and they would be willing to pay for that. Adaptation, on the other hand, which tries to protect against the impacts of climate change is a little more diffused in nature. It usually is implemented in sectors like agriculture, water, health, which are seen as more social sectors, rather as more industrial sectors. So the people who benefit from adaptation often have lower capacity to pay for the benefits of that adaptation. And unfortunately, this is something that is getting reflected in the floors of climate finance internationally, which is that everybody wants to pay for mitigation because there is an easy way of quantifying the benefits and of paying for them. Adaptation somehow is getting so connected with issues of development at large that it is becoming difficult to find additional climate finance with it. It is seen as something that is just subsumed within development aid. And this has

unfortunately led to this imbalance at every scale, national, international stage community. But it is really something that needs to be countered very strongly. I think it was at COP26 for the first time that there was a reference made to increasing the amount of adaptation funding internationally, till it becomes at par with mitigation funding. So right now, adaptation is about 20% or so, I think, of international private finance, need to bring that up to 50%. And also in terms of absolute terms, there was a target. But we really need to see action happening on that right now, rather than simply targets. So that is, definitely kind of a problem that needs to be countered. But, I think in the Indian context, there is really no substitute for adaptation action. We are so vulnerable to climatic stresses right now, whether it is in the mountainous areas or whether it is in coastal areas. I think this is something that would have to be made a priority going forward. And there is no reason why it should not become a priority. Even in, say, the Corporate Social Responsibility (CSR) policies of companies. Any company that is set up in an area where it's using the local water, that's using the local land, and is having some connections with the local community can be made responsible for using those resources, sustainably giving back to the community, providing health, infrastructure, education facilities for them. So I think this is something that can be made kind of responsibility of not just policy, not just finance, but also of industry.

Shreya Jai: And on a slightly divergent note, because this would be much more pertinent going forward, that how do you reimagine urban landscape? We move on to rural communities a bit later because that's a very broad conversation, but just on the urban part, do you think that urban landscape need to be retrofitted and reimagined for preparing them for better climate resilience? The point of reference here being, what happened at Bangalore, for instance. And when we are talking about it, do you think municipal corporations need to be repurposed for this task? They seem to be the weakest link, be it financially or be it talent-wise in the whole supply chain of urban planning. How do you make it more robust, more resilient for climate crisis?

Ulka Kelkar: I'm not an urban planner, Shreya. It's difficult for me to answer that question in a way that… I mean I don't have practical experience of designing or redesigning the city. I live in one, so I can see some of the problems. But as an economist, I think I don't tend to think spatially. I think, reimagining the city and what he referred to in Bangalore and other places. One of the issues that has come up time and again, even more so than this issue of municipal finance is the need for people who do the urban planning, who do actually cite the infrastructure, locate the infrastructure… for those agencies to have a combination of skills in urban planning but also in urban ecology. In fact, not just urban ecology, but the larger footprint that a city has when it draws upon the neighbouring peri-urban areas or even rural areas. So where are our drains going? Where is the water coming from? Can you actually replant a set of trees from a road site to another area and think that that will be sufficient in terms of preserving the ecosystem services for the city? I think all of these issues need to be, you know that capacity needs to be formally built within the agencies that do urban planning. And also going forward because climate change will bring all kinds of variability and unexpected kinds of impacts. The only way to grapple with it is to really have a lot more coordination among different agencies at a city level and also vertically with the state level and the national level. Because as you rightly said, urban agencies often don't have the finance or the mandate beyond a certain point. The sort of decision to install rooftop solar, for example, might be something that would be that of the

state government. The incentives for rooftop solar. So that's really kind of, is something that I think for those of your experts on your podcast work more from an urban background for them to speculate on. How can one reimagine? I always feel that cities that are there in other countries are not really the best models for ours. But there are surely many many things that can be done. I mean, a simple example is a rooftop solar. We have a target of 40 gigawatts nationally, but we have not been able to meet it. If we could have the right kinds of information, the right kinds of incentives, we could actually reduce some of the pressure not all of it, but some of the pressure that is required for utility-scale solar and could also reduce some of these issues of transmission and distribution losses because the electricity would be generated within the same industrial facility or hospital or resident welfare association. Of course, there are other problems of, who gains and who loses. For example, distribution companies have very poor financial health as well. It's always an issue. But I think some of these technical challenges can definitely be addressed in our cities. I think there's a wealth of information, really, and experts on urban ecology. But yeah, I don't know. I think you'll have to speak to your next set of guests about why the things that we know don't easily get implemented or become sort of assimilated into policymaking.

Shreya Jai: No, I absolutely understand the point from where you're coming from. And we did have a discussion at one of our episodes about urban landscape. And I think that it needs a much more closer scrutiny because it's not much talked about. The reason why I asked you because that I don't think it is talked about much or discussed from a policy lens per se. In India at least. I'm not sure if there are good global examples on that.

Ulka Kelkar: I think there is certain fragmentation even when cities are discussed in the context of climate policy. For example, at the COPs (Conference of the Parties) because negotiations happen between national governments, the contribution of cities is often relegated to side events. And then even kind of initiatives like C40 and others have focused more on the opportunity that growing cities have to develop differently and to have lower carbon emissions in the process. But the need for climate resilience at the city level, I think, is something that Indian cities will have to find their own kind of money. Because while attention tends to focus on these big mega cities, where life comes to a standstill, when there is a flood or the water logging episode, I think really good planning needs to be done in the smaller towns which are becoming big cities and in a way that holds on to the character of the city, right? To what it means to the people who call that city home. So I think that is something that goes beyond what climate scientists or climate economists can talk about, but it needs engagement with other disciplinary backgrounds as well.

Shreya Jai: Sure. The reason that I mentioned cities was also a part of what you said earlier. That how climate is playing a role in migration as well, as you also just mentioned that small towns are turning into big cities and they are not well equipped for that kind of population. So it's a dual problem. First, these towns are not ready for the kind of population pressure that is coming on them. Second, obviously, they are not well equipped for the climate crisis. And going forward, obviously migration would intensify as climate-related impacts keep increasing in years going forward. And there are a variety of communities which would be impacted by that. And I'm not just talking about communities which are in the coastal region. There would be a variety of

communities, people would be impacted in several ways because of climate-related impact. Do you think our policies are addressing these communities specifically, who would be facing the brunt of climate change?

Ulka Kelkar: Yeah, we need a range of protective measures for communities who are so exposed to climatic stresses and whose livelihoods depend on these natural resources. I think you very rightly pointed out the issue of data, which is early warning systems being able to, for example, be able to get reliable data in a timely way so as to decide things like the timing of irrigation or whether to go out for fishing or not if a cyclone is approaching, how to kind of select crops in a way that if there is likely to be poor monsoon in a given year, then you kind of make do within the water resources that are available. But all of these reach their limits. There are limits to what information and adaptation can do. Even if a person has information that says that it may not be safe to go out for fishing at a particular time because a cyclone is approaching, they may not have alternative sources of income to fall back on. They may not have the choice of not going out to work on that given day. We see the same kind of issue. For example, even when slums get waterlogged during heavy rainfall events in low-lying areas, if people need to bail out the water out of their homes, they have to forego their daily wages for that day. So beyond the point, information and adaptation based on that information has its limitations. You know, for example of changing your cropping pattern or your cropping practices also has its limitations because finally, you have to be able to sell what you have produced and you have to be able to sell it in a way that gets a good price. If there isn't that entire supply chain set up of refrigeration or mandis or the buyers. Then just switching the cropping practice by itself will not be sufficient. So finally, what happens is when climate change starts reaching the more widespread scheme or more recurrent disasters start happening, even instruments like insurance, for example, start to fail. Because if a region, for example, is being hit by climate events again and again either the premiums would be too high or the insurer will stop providing insurance. So it's just like, for example, if you were a smoker or if you had a history of a particular kind of disease in your family then you would be faced with a higher premium. So finally, what it comes down to with a lot of these kinds of communities is these two things. One is the need for lease giving in a way that equips them for new kinds of jobs or to improve their productivity, to diversify their income sources and not be dependent on only one climate-sensitive occupation. And the second is, finally, safety nets. Right now in our country, we have only the MNRE (Ministry of New and Renewable Energy) which is the only real safety net. There are some others as well, but that's the biggest one going forward. Some kind of pension or welfare scheme or something that protects those who may not be able to upskill themselves or who may not be able to have enough savings to bear the brunt of the current years of extreme events. I think that requires genuine thought about how to set up sufficiently well functioning and a well-funded welfare scheme. It's a big challenge. I'm not saying that it's by any means something that is doable or easy, but it will be something that will have to be done to protect the most vulnerable who are not able to adapt their way out of climate impacts or who are not able to upskill their way out of changes in the technologies.

Shreya Jai: Thank you! Great points! And I have a lot of questions, but I was thinking, do you know you have done projects on the impact of climate change on rural communities? Any case studies come to your mind which you would like to share?

Ulka Kelkar: Unfortunately, I haven't done anything very recently. I think my fieldwork was mostly in, Maharashtra in a drought prone region in Marathwada. And I think the famous example that is always given by everybody is that of community water budgeting, where community gets together and decides, based on information about what the monsoon is going to be, what crops to grow. But my question at that time always used to be, why is it always this one case study that we cite every time? Why is this case study not common practice in every village in India? So I'm copying out of your question on this one Shreya, because I feel that sometimes case studies, for whatever reason, don't get replicated very easily. But since you've asked me, and I don't want to be pessimistic. I will give you 2 good examples that I've heard about recently, I've not personally seen them based on my fieldwork, but I'm very enthused by them. One is from a panchayat in Kerala called Meenangadi, where the village basically decided to protect trees. And the chief minister was, I think, closely involved. And the local bank decided to give an incentive in the form of a tree loan so that if you protect a tree, you can take a loan against it. So it is recognizing natural resource as an asset, just as you would think of having some gold jewelry or property as collateral. There are many other aspects also of the Meenangadi story, because it's aiming to be the first, I think, a carbon-neutral panchayat in the country. But I think this particular aspect of really thinking of natural resources also as assets is a very important one at an institutional level. It's been recognized by a bank, not just by some NGO or social worker. The second example I have is from Madhya Pradesh, which is how the state's animal husbandry department, as an outcome of its state action plan and climate change, decided to bring back hardy native varieties of lifestock. They may not be the most productive in terms of the volume of milk that they give, but when there is heat stress, they are able to provide a steady supply of milk, which is because they are adapted to the nature of the climate. Whereas the more hybrid varieties, which are blocked in only for high productivity, and high yield, may actually fail because they're not suited to this climate. So, again, it is an example of something that has been mainstreamed into the policy, because the department has also been giving the livestock to farmers in village fares. They're providing incentives, they're providing fodder for these kinds of varieties. So it's a way in which climate can be mainstreamed and brought into policy at a state level. So I think these are the two examples that I can share at the moment.

Shreya Jai: No, thank you! Thank you for sharing those! And I agree on your point about the pessimistic view, where these case studies do not become a norm, and optimistic views like this, optimistic cases like these. So let's stick with optimism here and you know dwell a little bit more on how these areas or regions, how more such case studies can happen. And as you rightly mentioned, there are not many agencies. There's just this one, MNRE. And I go back again to my earlier question in a different form. Should there be newer local agencies or existing agencies, such as the panchayat and others, which should be strengthened or which should be equipped with climate-related knowledge? And how do we go about it? It looks like a very nice, fancy solution, at least in my head. But how do we go about it? As you said that it should be part of the policy, but then we have seen in India how it trickles down. You know, there's a very nice book that talks about how India's policy failed its own people, because by the time it trickles down to the last beneficiary, it doesn't matter anymore. How do you do that then?

Ulka Kelkar: Shreya, I don't know. I find it very strange because often those of us who are in the position of writing articles or speaking in podcasts about what the government should do or how we should build. Often when we are in our own small NGOs or small academic departments, the same problems crop-up, right? And we are not able to solve them, which is how do you actually balance specialization? When you said, should there be small specialized agencies? Yes, there should be, because they will be, having the specialized set of skills required to address a problem, but balancing that with the need to coordinate between many such agencies, because the specialized agencies will have a limited in the mandate, they will need to coordinate with other agencies across sectors, across scales. So I think even in our own businesses, NGOs, academic departments, we are often not able to satisfactorily solve this issue of specialization versus coordination, and balancing the two. So I am nobody to kind of tell how it should be done at a national or a countrywide scale. But I think there are few things that can be done. I think the first is, of course, making it a priority, in a big way. So just to give the example of Tamil Nadu, where we are currently working on the issue of MSMEs (Ministry of Micro, Small and Medium Enterprises). So these are micro, small and medium enterprises. In India, I think something like 100 million MSMEs are there. Most of them are micro with just very few workers. I think what happens with MSMEs is that although there are a lot of opportunities for switching to cleaner technologies, they are so strapped for cash and for time, that they can't really afford to do this. So how do we then make this happen in a way that not only at a national level does it lead to an impact on the carbon emissions, but for that particular MSME, which is typically just a few, maybe it's a small family, maybe it's a woman-led MSME. For them, it leads to a more resilient way of life. For them, it leads to more earnings, and cost savings. And I think here there are three or four things that can be done. One is to make it really a national priority, not just in a way that, there are schemes, but nobody knows about them. But really make them much better known, and able to be accessed. And the second is, of course, then, whose business is it to make that happen? So, in Tamil Nadu, for example, there is a small agency that has been set up called **FaMe TN** (Facilitating MSMEs of Tamil Nadu). FaMe TN is set up under the MSME department there. And it's their job, really, to do outreach, to make sure that these schemes are reaching the people that they're meant for. And then, because they can't do everything themselves, you need organizations who are MSME associations or NGOs or others to provide skilling programs, to provide information about where can you get finance to provide handholding about accessing these schemes. So it really has to be a collective effort at different scales, starting with making things better known. When you talked about, fieldwork, we used to do this **Participatory Rural Appraisal** technique, which is called a **Chapati Diagram** to map out institutions. And you have a bigger chapati, that institution, or the bigger circus, if that institution is important to you, and a smaller one if that institution is not important, say, in a route or in a particular context. And depending on how easy it is to access that institution's support, you place it close to you or farther away from you, and you get a network diagram. And what we used to find is that sometimes we used to go to the very upper caste, well-funded, well-networked villages. You would find that they really are able to access the local MLA or the assembly person, and are able to bring the schemes that are there to the village. But when we used to go to the Dalit habitation of the same village, we would find that, yes, they knew about these people, but they were far away. And the people who really just helped them during their time of need was perhaps the local temple or the local mosque. So both realities coexist in our

country. The schemes are there, the people are there, but access needs to be increased for all. And I am really nobody, to be able to tell how to solve that problem. But we have to keep trying. We have to keep thinking of various solutions.

Shreya Jai: You're just being humbled by saying that. But anyway, I'll take your word for it, and quite an honest perspective on the whole issue. I'll now just move on to a concluding question, and you can approach it the way you want to. This is the year where we are seeing impact of a lot of global headwinds. Be the war, be the energy prices, crude shortage. Europe has gone back on fossil fuels, this is our (India) first year into our journey into net-zero. At a broad-based level, what do you think should be the focus areas? Now that we are writing the first drafts of our policies for meeting our climate targets at a broader level, what do you think should be the focus areas? And where do we stand in this whole scheme of things? Do you think global climate financing would be a dampener? What India should do internally? How should we develop our own ecosystem of climate financing, climate planning and policy execution?

Ulka Kelkar: The way I'd like to answer this is that in some sectors, we are at a fairly early stage. And it's not just us as India, but maybe that technology is at a very nascent stage. In others, we are at a more mature stage, right? So what will be needed in terms of policy, in terms of finance, will differ from sector to sector. And I'll just give you a couple of examples. In the very mature stage, I would see something like solar, right? It's something that, I think is becoming more and more familiar in the country to us. But the details will matter, which is that instead of placing a very great emphasis on Utility-Scale Solar, we must equally put emphasis on rooftop solar because it is a way of making people involved in the clean energy transition. It is a way of saving on land that may be facing competing uses. And it is a way of reducing transmission and distribution losses. You are making a city or the community feel really look and feel green. So it is technologically not more complicated than Utility-Scale Solar. It is just that it is a little messier because there will be many different individual agents rather than a big company or a big project developer that lays out a massive utility solar plant. But Rooftop Solar Photovoltaic is something that will really make a huge difference to our country and to our cities. So in the case of a mature technology or a mature sector like solar, it will be important to pay attention to specifics and to details and look at all the other aspects. The second would be at a very nascent stage, like, for example, green hydrogen. As you're seeing recently, this mission has been announced. And one of the things that we do at WRI India, is we do **Systems Dynamics Modeling** on very long term kind of time scales, 50 years and so on. And obviously there's a lot of uncertainty. Nobody knows what the world will really look like in 2050 or 2070. But to the extent that we try to model the impacts of climate action on greenhouse gases, we find that with something like green hydrogen, the effect will start happening post-2030, 2040, 2050, when it would really start having a kind of greater effect in the industry. So with green hydrogen, what we are seeing right now with the mission is the early stages. And it's very timely that it is becoming adopted. But as we go along into the future, we need to step up these actions and have them play a greater than greater role in the package of policies that will be required for India to meet its net-zero commitments. And so with this, we'll go along issues of skilling people in the utility sector, the manufacturing and construction sector, again, making sure that water use is not excessive. I think there are some estimates of the water requirement for green hydrogen production. But you have to balance that against the water that might be saved if we phase out coal-based thermal

power plants. Because thermal power plants are lots of big hustlers of water. So all of these issues right now are very early. But as we go along, issues of waste will start becoming a big thing. The circular economy is a very powerful lever that can be harnessed. The third is an intermediate one, which is, I would say, neither early nor mature, which is something like electric buses of electric mobility, where, again, the kind of new development that we've seen with the tender that the government had of procuring electric buses, which led to a price discovery of electric buses that is less than the price of diesel buses per kilometer. Is something that's very promising. There's a very promising example of something where the technology is there, but it's the business model that might be holding back the upscaling of that technology. So innovative business models like this kind of public procurement are what we will need more and more along with little things about how those buses will be operated and a kind of coordination between the state or the city bus transport agencies and the manufacturers that are manufacturing these buses. So I think with all of these three kinds of technologies mature, nascent, or intermediate, I think there is a lot of excitement right now, there's a lot of momentum. There is, i think, a lot of scope, a lot of potential, really something to look forward to and something where our country by being one, as I said, '*learning by doing'* because there's no other countries' model to replicate. Can come up with very genuine kind of lessons or learnings, which it can share with other countries, whether it is in Africa or elsewhere. But as we go along, and particularly as the scale of all of these technologies goes up, what we will have to keep in mind ourselves, without anybody else telling us is how is it affecting the most vulnerable communities who as we said at the beginning of the conversation, may not be part of drawing room or a boardroom conversations. And how can we tweak the rollout of these technologies or these business models in a way that takes them along? Whether it is in the form of diversified job opportunities or whether it is in the form of, for example, conserving the natural resources that they depend on so much. I think that will be something that will have to be something on our minds for the next 10 years, I would say. How to do this transition in a way that is just and equitable as well.

Shreya Jai: That was great! Thank you so much! Just very quickly, a very small follow-up to that industrial decarbonization. Your quick thoughts on that. And do you think that it needs a kind of a systemic change for the other sectors that you mentioned or would it happen automatically because money follows that kind of approach? What are your thoughts on it?

Ulka Kelkar: I don't know, Shreya. I've never really worked in industry, but what I can see of the industry from outside is that industry can be very nimble. And I don't just mean big industry, but even small producers can be very agile, very nimble, very quick to spot opportunities. And I always like to give this example of Gavar Beans. A few years ago there used to be these farmers in Rajasthan who used to grow this, mainly because it was used as an additive in, say vanilla cream or something like that. But suddenly there was one year in which the international demand for Gavar Beans just skyrocketed and it was because it was being used in fracking. It was being used as an additive in the fracking of water to produce, to kind of release natural gas from the rocks. And these farmers in Rajasthan just made a killing in one particular year! But the next year, China developed a synthetic substitute for it and so you didn't need the Gavar Beans anymore. So yeah, so industry is I think nimble and it will respond both to opportunities as well as to threats like the one of the **Carbon Border Adjustment Mechanism** from Europe. But

there are I think two things again over here, which is to protect micro, small and medium enterprises, because they will need special attention, special hand holding and it's almost sometimes even a misnomer to call them small industry because the micro ones are really very tiny. They may be in areas like food processing, garments and hiring a lot of women workers, for example, for whom this may be the only opportunity for a better life, a better future for themselves and their children. So that is one thing. We shouldn't expect all industries to voluntarily hold themselves to very high standards of environmental and social safeguards. For that you need policy and you need to set standards that an industry has to follow. So on industrial decarbonization, just to answer your question, I think on the technological side, definitely there will be a spontaneous momentum but it can be helped along by two things by the government. One is perhaps setting up some kinds of technology partnerships with the more industrialized countries when it comes to new technologies like green hydrogen and others as well that we will need perhaps maybe even fusion for all you know. And the second is having safeguards that protect the smallest of industries and also the communities that live around where industries are located to make sure that there aren't any adverse impacts as we scale up industrial decarbonization.

Shreya Jai: No great, thank you for answering that. It was quite a balanced answer. And I agree on what you said that the voluntary part. There might be some kind of announcements or targets that the industry might be setting up for themselves because it makes business sense. But an overall change comes when there is a set target to it or an incentive if one might call that. So we'll have to see how the government approaches that because it's a huge segment and it could be a game changer for India's own climate planning. But we will see this year! But, thank you! Thank you once again for joining us here. It was a great conversation. I think we have touched on so many topics. This was such a broad conversation and took up everything to answer. So thanks again!

Ulka Kelkar: Thanks so much for inviting me, Shreya!

[end]

[Podcast outro]

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