

TRANSCRIPT

Environmental Insights

Guest: Ray Kopp

Record Date: November 1, 2022

Posting Date: November 7, 2022

LINK to podcast: <https://on.soundcloud.com/JSb2T>

- Ray Kopp: It is an opportunity for the world to come together and talk about these things. The UNFCCC has put together an enormous amount of transparency and reporting. Sounds like things that are not all that exciting, but they're fundamental to an understanding of where we are with respect to climate change and how to reduce emissions going forward.
- Rob Stavins: Welcome to [Environmental Insights](#), a podcast from the [Harvard Environmental Economics Program](#). I'm your host, Rob Stavins, a professor here at the [Harvard Kennedy School](#) and director of our program. We've had the pleasure of including in these podcast conversations over the past three years some leading environmental economists, and today is no exception, because my guest today, [Ray Kopp](#), has been a leader in this field for some 40 years, nearly all of it from his perch at [Resources for the Future](#), the Washington based think tank, where he is a senior fellow. Welcome, Ray.
- Ray Kopp: Thanks, Rob. Thanks for having me. I've been looking forward to this for quite some time.
- Rob Stavins: Great. So, in a few minutes, I'm eager to hear your assessment of what we should expect to happen at this year's climate negotiation, the 27th Conference of the Parties of the United Nations Framework Convention on Climate Change that's taking place in Sharm El-Shiekh, Egypt. But first let's go back to how you came to be where you are. Where did you grow up?
- Ray Kopp: So I was born in New York City in Queens, was there until I was, oh, I suppose, nine or 10. And then moved north of the city into Westchester County and grew up there and then left to pursue my education.
- Rob Stavins: So primary school and high school were where?
- Ray Kopp: That was in Westchester County in a little town called Katonah, which was on the rail line, so my dad could commute into the city every day.
- Rob Stavins: I see. And then you went off to college. Tell us about that. Where was that?
- Ray Kopp: So that was a bit of a detour in my higher education. I thought I was going to be a chemical engineer and I went to the University of Akron, which many of you know as the hub of polymer chemistry in the United States. Quickly became

obvious that I was not going to be a chemical engineer given the interesting world that took place in the late sixties. And I ended up with a degree in business from the University of Akron and then taught economics at the university for a while and went on for a PhD at State University of New York at Binghamton.

Rob Stavins: And so in your PhD, what was your dissertation topic and who was on your dissertation committee?

Ray Kopp: So the topic was, as with many people looking for topics, I was doing an applied topic in microeconomics. At that time there was no real environmental or natural resource subfield. And so it was an examination of electric power and how electric power plants were adapting to, at the time, the new [Clean Air Act](#). And it involved a lot of econometrics. My lead advisor was Kerry Smith, who had been at RFF a couple of years before, and it was actually a most enjoyable experience unlike many people's dissertations. I actually really enjoyed producing that document.

Rob Stavins: It's interesting, I didn't realize that Kerry Smith had been your advisor there.

Ray Kopp: It was my luck that he was there, since I had taught quite a bit at the University of Akron when I went to Binghamton, they didn't put me on as a TA. They put me into the research side and I got assigned to Kerry and first interactions with Kerry Smith, many people who know Kerry, he doesn't sleep, he works all the time, but he's just a remarkably wonderful individual and you couldn't have asked for a better dissertation advisor.

Rob Stavins: And very, very, very generous. I mean, intellectually generous, perhaps other ways as well. So, when I was doing my PhD which I received in 1988, so I think I started in the program at Harvard in 1983. At some point when we had to choose fields, which probably would've been like 1985 or so, beginning of my third year, there was of course, as you've suggested, no field in environmental economics. Actually there isn't even now in the Harvard Department. But one could design their own field. And so I decided I wanted to study environmental economics for my self-designed field. And I sent out letters to a few people asking for reading lists and what they would recommend. And I only remember one letter that I got back, and that was from Kerry Smith. And he essentially laid out for me the field of environmental economics that then I did a couple of readings courses with professors.

Ray Kopp: His knowledge of the literature was and still is mind boggling. How he keeps it all in his head, I have no idea. But you could call him and ask me about anything in the field of environmental natural resource economics and over the phone he will spin out the 12 best references that you ought to look at.

Rob Stavins: Yeah, very much so. You graduate from Binghamton with your PhD in economics. What's your first position out of graduate school?

Ray Kopp: Resources for the Future. Kerry had left Binghamton, had gone to Resources for the Future. I was in the job market and had looked at a couple other opportunities, names of which we won't go into, but from my wife's perspective these were in some odd parts of the US and whereas an offer from RFF came where we could live in Washington DC and that fit her quite well, as it turns out fit me perfectly. So we ended up going to Washington DC. I left Binghamton in August 1977 and the next day moved to Washington and started the work the following day.

Rob Stavins: And since then you've been at RFF consistently except, I believe, for a visiting professorship at the University of North Carolina at Chapel Hill in the early 1980s. Is that right?

Ray Kopp: That's correct. You can always target the year I was there because it's when Dean Smith won his first national championship.

Rob Stavins: I see.

Ray Kopp: But that was quite a wonderful experience. But it took me away from research and I couldn't see myself being a professor for the rest of my life. There was just too much other stuff that I wanted to do. Although Chapel Hill, I got to tell you, it's just a gorgeous facility. The university is a gorgeous facility and the town is wonderful.

Rob Stavins: So let's turn to your work in the world of environmental economics and policy scholarship before we get into actual policy itself, like COP 27. Now, I would assume that you've seen some significant changes, Ray, in the scholarly world of environmental economics since your 1978 PhD degree, because that's more than two decades ago. So what changes in the scholarly world of environmental resource, energy economics, whatever, stand out to you?

Ray Kopp: That's a tough question. I do think kind of the breadth and depth of what was happening. So if you dial back into the 70s and the 80s again, you had people who were working in the field who did not come from environmental natural resource economics backgrounds. They came from public finance, they came from industrial organization. They came perhaps from a modeling perspective. And they were doing large scale analyses of the implication of regulatory structures which were new for both the US and the world. The Clean Air Act, obviously still one of the most important pillars in the United States, the Clean Water Act, other policies like that. And so it was looking at the impacts that those policies would have, not only on the emissions, but on the economic activities within a country. I think everything's gotten a lot more narrow now. People have gotten a lot more specialized and you're not getting the broad analyses of those kind of policies except at the international scale where we're talking about climate change, where again, big integrated assessment models are doing that broad kind of analysis.

And so when I was an RFF as an active researcher, we were deeply involved in the energy crisis of the 70s, for example, and spending a lot of time thinking about how to model the impacts of that. And then as you went through and developed more regulatory structures, understanding how those structures would affect individual industries would affect economies and would affect obviously the environment in which those industries were located. So I'm not criticizing what's happening today, I'm just saying there has been a narrowing of the focus where someone who is involved in environmental and natural resource economics is really looking at a much more finally disaggregated kind of problem than we were looking back at the 70s and early 80s.

Rob Stavins: And it's not surprising that as the field matured, it became more specialized in terms of the foci of individuals working in the field, right?

Ray Kopp: Oh, absolutely. Yeah. And the tools have gotten so much better. Certainly the computational tools are now obviously far better than they were when I was in the dissertation. I'm sure when you were as well, Rob.

Rob Stavins: Yes, absolutely. So before we turn to the policy world, I want to ask you one other question about your research and your writing. And I apologize because I know this is asking you to identify your favorite child. But of all the published research of yours, and there's a lot in your CV, what's the one research publication that you are most proud of?

Ray Kopp: An easy answer to that is the work I did with Michael Hazilla where we developed a general equilibrium model, one of the first ones in the US and looked at the impact of the Clean Air Act on the national economy. But I will say that at the same time I was doing scholarly research with Michael Hazilla, I was also involved with another group of individuals who were working on major environmental disasters, including the Exxon Valdez. And the work we did supporting the litigation around those disasters, those oil spills and other kinds of contamination, was one of the most exciting bits of research I have ever been engaged in. It didn't necessarily result in a AER publication, but they were big interdisciplinary teams. We were doing cutting edge research. And it was, to me, tremendously exciting.

Rob Stavins: Which turned out to be very important. And also, I believe, maybe I'm wrong about this, but my recollection is that some of the work you did in supporting that litigation actually did appear in one form or another as writeups in some publications, did it not?

Ray Kopp: It actually did. There was a lot of confidentiality that had to be cleared, but we were able to publish a good deal of that work.

Rob Stavins: So it's worthwhile now for people to go back and take a look at some of that. Now, turning to current times, [COP-27](#) in Sharm El-Shiekh is obviously receiving a lot of attention now as presumably it should. You are there together with

others from RFF this year. Let me start by asking you, in the [Paris Agreement](#), there are two elements which are intended to advance ambition. Maybe there are many elements that are intended to advance ambition. And that's important because I think most people would say, logically there are two necessary conditions for ultimate success. One is adequate scope of participation by countries. And we've got that, we've gone from 14% of emissions from participating countries in terms of taking on targets under the Kyoto Protocol to 97% under the Paris Agreement. But the sufficient ambition is the other necessary condition. Are there ways in which the Paris Agreement in your mind can advance ambition and has it been successful so far in doing that?

Ray Kopp:

Well, there's a couple of ways this can happen. One is what's called the [Global Stocktake](#). With the Global Stocktake is, is a mechanism by which all of the nationally determined contributions from the countries participating in the UNFCCC is evaluated to determine whether the globe is on a path to keeping global temperature increases below 1.5 degrees Celsius, that's above pre-industrial levels, or that's one of the targets of the Paris Agreement or well below two degrees. And so, the idea being that if we look at those commitments and we do an analysis of whether we're on target and if we're not on target, the idea is that there's an opportunity for countries to increase their levels of ambition in the next go around, these run kind of five-year increments, increase their ambition and reduce emissions even further. So, the second portion of this is called the ratchet mechanism.

The idea being that if there's a gap, we're going to try to reduce that gap by having all countries increase their ambition by increasing the amount of emissions they're going to commit to through their NDCs. So I think this is a mechanism, we'll see how it's going to take place. That mechanism will not be formally deployed until 2023. But I will say that there's a [synthesis report](#) that has already come out from the UNFCCC Secretariat that gives us an idea of what those gaps look like with respect to hitting the targets, and they're not encouraging. We can talk more about that, but I think we already know that there's going to be a major gap. We've known that for quite some time. I haven't seen a lot of countries step forward to increase their ambition in the recognition of that gap. So, the jury's out on how effective this mechanism is going to be.

Rob Stavins:

That certainly correct, and that's what recent reports indicate. Although perhaps I'm too much of a half full glass of water kind of guy. But I remember when the business as usual predictions for this century were up to seven degrees C increased temperatures, and then with the Paris Agreement and now the original set of nationally determined contributions plus the increases by a few countries, including the United States, that if the targets were fully achieved, and I'm not saying they're going to be, that then we're talking something like two and a half degrees C. Obviously that's blowing past one and a half or even two. But it's a remarkable change from what the discussion was not very long ago.

Ray Kopp: Oh, absolutely. I mean, I think the syntheses report says that global emissions could very well peak in 2030. So, that's the good news, there's no doubt about that. And as you say, depending on whether the glass is half full or not, is what kind of a temperature target you want to hit. If you want to hit a two and a half degree temperature target, then yeah, there's possibility of doing that. If you want to hit 1.5, as you know Rob, the amount of carbon budget we have remaining between now and 2050 is extremely small to be able to hit that 1.5 degree target.

Rob Stavins: So in order to do that, that's the focus. It's not the sole focus, but it's a big part of the discussions at COP-27 in Sharm El-Shiekh. Our listeners, some of them are probably inundated now by the fact that the press, many newspapers who don't cover climate change all year, only here and there, are suddenly writing about climate change because of the COP. This happens every year. So to filter through all of that, what's your guide Ray, to what our listeners should look for and listen for at the COP? What are the big issues?

Ray Kopp: So I do think, again, I would pay a little bit of attention to this Stocktake issue because this is going to come out next year and there's going to be a significant gap that needs to be filled in terms of reduced emissions. And so people are going to be looking to, for countries to really increase their ambition in their NDCs. And so this is going to sweep through the COP over the next 10 days or so. The other big issues are not surprising. These are perennial issues. The first ones going to be around finance. And so this is finance in two forms, finance to help developing countries mitigate their emissions. And the developed world has committed to producing a \$100 billion annually to be able to do that, has yet to deliver on that particular promise. And then a second piece is on adaptation where again, funding is going to be needed to support building resilience in developing countries.

Right now, there is a bit of a lack of trust between the developing world and the developed world with respect to the deliverability of those funds going forward. And on the developed country-side, there is the problem that to be able to hit those particular targets you need a lot of private investment, not just government funds. And the private investment has been lacking considerably, certainly even on the mitigation side, but most certainly on the adaptation side. So, I think there's going to be a lot of conversations about one, how do we guarantee that these funds are going to be made available, recognizing that they're likely not going to come completely from governments, but that the private industry is going to have to step up. And then how do you get private industry more actively involved in funding projects in developing countries? And we can talk a little about the risk that's associated with those rates of return and how governments can de-risk those activities. But finance is going to be a huge deal.

Rob Stavins: Now beyond the \$100 billion commitment, and now the fact that even though it's not been achieved developing countries would like to see it increase to 200 billion annually or more. In addition to that which has been targeted towards

mitigation and adaptation, there's the reality that certain climate impacts are inescapable and cannot be adapted for. The poster child would be the loss of land of a small island state, in which case climate change is existential, not just costly. And that's where this phrase, loss and damage, comes up, which some climate activists now are referring to needed reparations for previous emissions from the largest emitters, the United States, China, European Union, Russia. What should we watch for in terms of these debates about loss and damage?

Ray Kopp:

Yeah, this is, again, one of these issues that every COP, it becomes more salient and both sides become more vocal about it, not surprisingly, because we are now seeing the impact of climate change, not only in the developing world where it is severe and where people are at most risk, but here in the US we see the impacts. And so it's not that there's not recognition that there's a real problem going forward with respect to this. I think from, and I can speak from kind of a developed country perspective, at least from the US side, there's always going to be opportunities for the US to provide aid to countries that are suffering these horrific damages associated with climate change. One of the issues is, is it going to be taking the form of aid, which means it's more of a voluntary contribution on the part of the US, or is there some formal liability that the US bears associated with these damages?

And I think for the US to accept the idea that it is legally liable for these damages to occur is something that has been shunned and I think will continue to be shunned by the US. I can't speak for the European Union and others. But mechanisms by which aid can flow in a way that is more consistent with the needs on the ground, I think is going to be really important. And then of course, there's this idea of attributing a particular loss to climate change rather than just natural weather variation. You can always argue that it's really nothing to do with climate change. These are kind of some scientific issues. Those can be worked out. But if this issue about aid versus liability has been around since the beginning of the loss and damage debates a decade ago, and I don't see it's going away. That said, it's a hugely important issue and one that's going to occupy a lot of time at the COP over the next several days.

Rob Stavins:

And a lot of vocalizing by delegates and probably a lot of coverage in the press because it's the issue over which you could even see a walkout by delegates. And there hasn't been a threat of a walkout for many, many years now at these annual conferences of the parties. Now, the Paris Agreement finessed this loss and damage issue in an interesting way. In the agreement itself, it says that loss and damage is very important, it should be taken seriously. And then in the decision that accompanied the Paris Agreement, it says that the parties agree that it should not be the basis for legal liability or compensation, which as you said, that's exactly the challenge here. It seems like it's going to be difficult to continue to keep it off of the table the way it has been in previous COPs. At least that's my impression. I don't know what you think.

Ray Kopp:

We'll know more in a few days. Again, by the time the weekend rolls around, I think we'll have a pretty good idea of where this stands and whether there's

some room for compromise. If both sides stick to their hard positions, where[in] the developed world, it's only about aid and the developing world, it's about liability, and can't see where there's a middle ground, then this will just be a confrontational experience. Somewhere there's got to be a middle ground here where we can think about insurance markets, we can think about other kinds of ways of financing the rebuilding after these particular episodes take place. Again, of course, it is tied to resilience in some sense. And so there's nothing you're going to do for the small island nations that are right at sea level right now, but in other places, I think you can build some resilience in. But again, we need to get to the point where there's discussion about the middle ground here rather than just adhering to our hard positions.

Rob Stavins: Now, a question I always receive from the press at the end of each year's conference of the parties, and I bet you get this question as well is, was the conference a success or a failure? When you get that question at the end of COP-27 Ray, if you get it, what would be the criteria? What's going to make COP-27 a success or a failure?

Ray Kopp: I always look at these things. Rob. I think you do the same way. This is not a single event, this is a process.

Rob Stavins: Yes.

Ray Kopp: Okay. So this is an event in a process. And so the question you have to look at is over the last several years, is the process working? And I think you already pointed out, look at the progress we have already made. Now, is that due to the UNFCCC or is it due to a variety of other factors? There's certainly a lot of other factors involved, but it is an opportunity for the world to come together and talk about these things. The UNFCCC has put together an enormous amount of transparency in reporting. Sounds like things that are not all that exciting, but they're fundamental to an understanding of where we are with respect to climate change and how to reduce emissions going forward.

And so, the ability to look at the NDCs and unpack those and understand what a country needs to be able to hit its particular target and then understand whether the global community can provide that information or what have you. Those are things that are part of the process going forward. And the process continues. We're making advances on building the carbon markets together, the transparency. I do think there is a lot more discussion about options for finance. And so I do think in general it is a successful enterprise. Is it moving at the pace necessary to hit 1.5? No. But it is a process, and I do think it's moving forward. So at the end of the day, I don't necessarily go back and give these individual COPs a grade, but has progress been made is always something that I look for and I expect there would be some progress made here. I would love to see more progress made on this loss and damage [issue] and trying to get more focus on the middle ground here. If that came out, then I would consider this to be a tremendous success.

Rob Stavins: So, stepping back then from COP-27, and even from the UNFCCC, are you optimistic or pessimistic for the future about climate change policy around the world, not just the United States, but around the world?

Ray Kopp: I'm of mixed minds of that. Again, I do think that tremendous progress has been made in decarbonizing developed economies, and there's just no getting around that. Certainly progress has been made. There's still an enormous amount of work to be done to electrify developing countries and then decarbonize that particular sector. And we'll see how that plays out. One of the issues that is coming up, and it will be talked about in the COP, there's already a series of side events that I know are forthcoming in the next few days, and that's around the interplay between emission reduction policies targeting the industrial sector. And these would be the sectors producing basic commodities, iron and steel and chemicals and what have you, that are traded internationally and international trade. And so the issues can be boiled down quite simply. If you are a developed country, you are producing these internationally traded products, you are hoping to decarbonize those industries through policies and those policies raise the cost of those products, then you lose competitiveness in the international market.

And what you see with the European Union, their carbon border adjustment mechanism, since the European Union imposes very high carbon prices on its manufacturing sector, on its electricity sector as well, and they fear that they're losing manufacturing to countries that don't have those aggressive policies, they're putting in border measures, they're putting in tariffs to kind of limit the leakage of these emissions from the EU elsewhere. This is a big issue. It's one that's in the US as well, Japan, Korea, you name the countries that are developed countries that are working on the internationally traded commodities. And I see this is going to be something that's going to be talked about in this COP. And when we move to Dubai, I think it's going to be really important there. These things are just gaining traction now, but I think Dubai will be focused pretty heavily on what we call border measures, or this nexus between climate policy and international trade.

Rob Stavins: And you're referring to the subsequent Conference of the Parties....

Ray Kopp: That's correct.

Rob Stavins: In 2023. So that's a perfect place to bring this conversation to a close about the United Nations Framework Convention on Climate Change, these annual Conferences of the Parties, and so much more. Thank you, Ray, for having taken time to join us today.

Ray Kopp: Thank you, Rob. I really enjoyed this. This is great.

Rob Stavins: Our guest today has been [Ray Kopp](#), a senior fellow at [Resources for the Future](#). Please join us again for the next episode of [Environmental Insights](#):

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Announcer:

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