

World Class Podcast

Marshall Burke, “Taking the Temperature on Climate Change”

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This transcript has been edited for clarity.

McFaul: You're listening to World Class from the Freeman Spogli Institute for International Studies at Stanford University. We bring you in-depth expertise on international affairs from Stanford's campus straight to you. I'm your host, Michael McFaul, the director of the Freeman Spogli Institute.

Today we're talking with Marshall Burke. Marshall is deputy director of the Center on Food Security and the Environment here at FSI, as well as an associate professor in the Department of Earth System Science and a senior fellow at the Stanford Woods Institute for the Environment, and Stanford Institute for Economic Policy Research. I actually think he has, like, five more titles, but we'll stop with those right now. He's in high demand here at Stanford University, given his work.

Marshall is an expert on the social and economic impacts of environmental change, and we've asked him to help unpack the recent COP26 summit on climate change and offer some thoughts about what needs to happen going forward.

Marshall, thanks for coming back to our podcast.

Burke: Thanks for having me. Good to be here, as always.

McFaul: So, let's start with the 30,000 feet and kind of check in. How are we doing on the big picture? We'll get to Glasgow in our second question. But where are we at in terms of the climate crisis? How worried are you? Give us your grade as to how we're doing right now at the end of 2021.

Burke: Let's first check in on the climate itself.

McFaul: Great idea.

Burke: So, how much have we warmed since pre-industrial times? Looking at this since about 1900, we've warmed about a degree or a little more: 1.2 degrees Celsius, so a couple of degrees Fahrenheit. So, you've already seen a degree of warming; climate change is already

happening. Again, the science on this is very well established. We know that the climate is warming. We know that it's us. We know that it's humans. And we have a lot of evidence that this warming already has caused harm around the world and that that harm will be amplified as the climate continues to warm.

Alright, so we're warming already. It's already causing damage. The big question is what's going to happen in the next few decades and throughout the rest of this century. Are we going to get our act together and slow this warming, or adapt quickly to the warming, or are we not are we not going to mitigate at all? Are we going to muddle through, or are we going to continue to really suffer the damages of climate change? That's the big picture question.

McFaul: Say a little bit more before we move on; I jumped to solutions about how we're doing. But put some dimensionality to that harm in all of its different ways. I've heard you talk about it before and I think it's important for our listeners to understand it's not just, you know, tornadoes and hot summers. You've actually tried to quantify it. Tell us a little bit about those harms you see today.

Burke: We have a growing, I would say mountain, of evidence at this point of how changes in the climate – and here we're talking about the climate really broadly – and warming temperatures are affecting us. That's the main effect of increased emission of greenhouse gases and what that does to our atmosphere.

But really, that represents a lot of different changes. It represents changes in temperature, of course, and in rainfall patterns and all the things that those changes bring with it: increasing floods, increasing wildfires out here in California – something that my group works on a lot. So just really a cascade of impacts.

So again, there's a mountain of great scientific research that tries to translate these changes in climate into impacts on the ground and impacts on the human systems that we care about.

So, what do we know? We know that a warming climate and a drier climate negatively affects agriculture around the world. That's been known for a long time. That's of some important here in the U.S.; agriculture in the U.S. is maybe 2% of our GDP. So, not central to our economy.

But it's super important in other parts of the world where agriculture is really important for people's livelihoods and where it constitutes a large proportion of the economy. Agriculture is the first and maybe best-studied sector that we care about. But the impacts of climate go far beyond agriculture.

There are very strong linkages between a warming climate and worsening health outcomes. We know hot temperatures are bad for people. If a warming climate means more wildfires, we

have a lot of evidence now that that can be really bad; breathing dirty air is extremely bad for us.

It has often some pretty unexpected effects on these health outcomes. So the first order ones, maybe the ones we think about people have more negative cardiovascular outcomes, more heart attacks. People have noticed this for a while. But we also see more homicides. We see more suicides. We see entire patterns of social engagement change when the climate warms.

McFaul: Alright, so that's a daunting, and that's scary. Let's talk a little bit about what's happened in this year. Let's start with Biden first and then let's talk about Glasgow.

We have a new administration; they've hired a climate czar. I'm actually not sure if that's his title. He's my former boss, by the way, Secretary Kerry. They seem like they have a very different strategy. How do you evaluate what the Biden administration is doing with respect to climate change? And then – they were a part of it – talk a little bit about your takeaways from the summit and maybe help people understand these summits. What does it mean to have a summit on climate? Does it matter? Are people just getting together to talk, or does it have some practical outcomes?

Burke: So, anyone who works on climate was really excited to see, even before Biden was elected, the platform on which he was running. It was really the first mainstream presidential campaign where climate had played a fundamental role. Biden was out there on the campaign trail really talking up the importance of climate, the damages from climate that are already happening, and what we need to do is take aggressive action in the future to deal with the problem.

So, for folks who work on climate change, this was an amazing breath of fresh air and there was so much excitement coming into this administration. On the one hand, in terms of ambition, both on the campaign trail and legislative ambition over the past year: A+. This was just amazing ambition, and hiring the right people, and really working hard to get things on the table.

So now the question is: what can we get passed? Right? What can we do right legislatively, and if the legislative process fails, what we do in other ways? And that's really the big issue, and as we sit here right now in late December 2021, that's still a little bit unresolved.

McFaul: Okay.

Burke: What have we been able to do domestically? There are two main pieces of legislation that the Biden administration has tried to build climate legislation into. One is the infrastructure bill which passed. That bill is really not going to do anything about greenhouse gasses. It's less on the emission side, and it's more on what we would think of as adaptation;

it's making us more resilient to the changing climate that we already had. For instance, it had a lot of investments in flood control measures, which is a big part of climate change. But think of that as resilience.

McFaul: And you think that it has to be part of a strategy, right? That kind of adaptation?

Burke: Absolutely. And let me come back to that in a second; I think it's going to be even more important than we had hoped.

So that infrastructure bill had a climate component. But really, it's not going to do anything about the long-term warming. It's just going to help us adapt, if you will.

The signature pieces of Biden's climate agenda and much of his social agenda is now in the Build Back Better Plan, and that is languishing in the Senate right now and waiting on negotiating some supports. We have a lot of holdout Democrats, and a lot of the key climate provisions have already been stripped from that bill. So, I am not optimistic that the key bits of the climate ambition from the Biden administration are going to make it through that bill.

That's disappointing. It's being held up by one senator now. The other has signed off. It's Joe Manchin from West Virginia, now, that is really holding up progress here. And it's somewhat ironic, from someone who studies climate impacts, that West Virginia's one of the ones who has suffered most from climate change in terms of many of the impacts we talked about, including flood damages. His state would actually have a lot to gain from federal investment in this problem. And yet, he's getting in the way of it. So that's disappointing.

McFaul: That is disappointing. I mean, he also is involved in the coal industry, right? I want to get to Glasgow next, but let's dig a little bit into the way you see the domestic politics here in the United States on these issues. Lots of aspiration – A+: that's a high grade, by the way.

As somebody who's not an expert, but watches this space, there's is just this giant gap between the science – which as you said at the beginning of our conversation seems pretty overwhelming – and the political will to do anything about it. How do you understand that gap? And maybe it's really simple, but maybe it's more complex. I'm just curious how you see it.

Burke: I think our understanding of that gap is changing a little bit. So, there's very good opinion polling now on what your average American and specific Americans think about climate change. Number one, do they think it's happening? So now a very large majority of Americans agree that climate change is happening.

McFaul: And Marshall, that wasn't true 10 or 20 years ago, right? That's changed?

Burke: Yeah, so this has gone steadily up over the last two decades. There's very broad consensus that climate change is happening. About 60% of Americans agree that humans are the cause. So again, a substantial majority. That also is new, and that's changed over time.

And a majority think that climate change is going to cause harm to someone: either people in the future or people in developing countries. Where Americans do not seem to agree is that only about 40% of Americans say that they're worried that climate change is going to cause direct harm to themselves.

McFaul: That is really interesting!

Burke: Yeah!

McFaul: It's really a problem, but it's a problem for my neighbor, not me.

Burke: No, exactly!

McFaul: Wow.

Burke: Our research would suggest that that's probably incorrect. Changes in climate are going to affect most if not all of us in the U.S. Now, these effects might not always be super apparent and they might not be large, but there will be effects.

So, public opinion has certainly changed. Many more Americans are on board that the climate is changing, that humans are the cause, that somebody is going to be harmed, and that we should do something about it. There's much more support for climate legislation across the board. There's very strong support from Democrats, but also increasing support from Republicans. Depending on how you ask the question, you can either get majorities of support or not.

So given that, why do we still see the legislative gridlock on this sort of climate legislation that's in front of Congress now? Maybe it still has something at least in part to do with public opinion. But you mentioned, for instance, Joe Manchin's linkages to the coal industry.

There are specific industries who are going to be harmed by this legislation, and they are quite organized in fighting this legislation, and in funding politicians who fight it, and in funding organizations, either transparently or not, that are fighting climate legislation. They are fighting climate action in the courts. It's the "diffuse benefits, concentrated cost" problem that pervades not only the climate problem but many political problems. I don't have to tell you that; you're an expert in this stuff. But again, we're seeing it play out in the climate world.

McFaul: And could it play for some time, or do you see this as the pendulum has finally swung and Manchin's the last hurrah?

Burke: It's hard to say. We are closer than we have ever been to really meaningful climate legislation. Right now we are one senator away.

The optimistic view is that we might not get it this year, but we're really close. And the trajectory has gone that way. Again, this is way more ambitious than we've ever been in the past. And we're really close to being able to do something that we've never been able to do before. We're probably not going to get there; we're certainly not going to get there before Christmas this year. Biden was hoping for a Christmas, I think.

McFaul: Yes, exactly.

Burke: Not gonna happen. But, but the optimistic view would be that the trajectory is right and we're going to get some part of this done eventually.

McFaul: Eventually. Well, let's shift now to the international piece. I keep mentioning Glasgow – and COP26 is the acronym – but tell us a little bit about what these meetings are. This was a big one. Well, they're all big but there's a build up to them. There was a lot of anticipation about it and the deliverables. The Chinese and the Russians chose not to show up physically. Explain what the process is that leads to these, and then give us your kind of assessment of what happened.

Burke: So the “COP” is the “Conference of the Parties,” and this is the annual meeting of the signatories to this climate change treaty that most countries in the world signed in 1992. These Conferences of the Parties had been happening every year. So, Glasgow was the twenty-something version – the 26th.

And some seem more important than others. Paris was the last very big one that got a lot of publicity. And out of Paris came these very clear stated ambitions of what we wanted to do with mitigation. We wanted to limit global warming to two degrees Celsius and pursue ambition to limiting it to 1.5 degrees Celsius.

So at the top, if you remember, we're already at about 1.2 degrees Celsius. We're getting darn close to the ambitious goals set out in Paris of 1.5 degrees, and we're not that far from two. Paris set these pretty ambitious targets, and the goal at Glasgow, the most recent summit, was to really nail down countries on what they were going to do to meet those Paris targets.

The way the global community has decided to do has actually changed in the last few decades. Two decades ago, we tried the Kyoto Protocol, which is to have mainly wealthy countries sign binding targets. So, you sign up for a specific target, that target is binding and

those targets are ratcheted up year over year. That turned out to be a challenge. Many countries didn't want to do this. It was never ratified in the U.S. Senate.

And so what has been tried basically since Paris is another approach to have countries announce what they're going to do in non-binding targets and to make these public and have them be transparent, and then basically use public pressure and shame to get countries to increase their ambition and to actually do what they say they want to do.

It's a different approach, and one that could get the Paris Agreement signed right by most countries in the world. And it remains to be seen how well it's going to work, but that's the new approach. So Glasgow was really just to try to amplify the ambition and to get countries to be very transparent about what they were going to do.

Was Glasgow a success? I think it depends on your perspective of what we should expect from these meetings to begin with. I don't think anyone going into Glasgow expected that climate change was going to end in Glasgow, Scotland. Many people's expectation would be that mitigation is hard, it's slow, and we're going muddle along as a global community.

So if that's sort of where you're coming from with your expectation from these large public meetings, Glasgow was okay. We had a lot of countries come to the table and make commitments in ways that they hadn't done before. We have new important agreements on certain greenhouse gasses that we've learned recently are pretty damaging: things like methane. There was new attention given to methane, and that was great.

Where we failed to make progress – and this is an area I think is really important – is less on the mitigation side, but on something that's called “loss and damage.” Basically, many of the developing countries argue (correctly, in my view) that they are suffering the damages from climate change, and it is a problem that they have not caused. The wealthy countries – us – who have caused the problem should be compensating developing economies for the damage we've caused.

That was front and center, which was great in Glasgow. So again, glass half full version is we're talking about it and it was on the table. But really it got punted sort of down the road. It's going to be brought up next year in Egypt at the next COP, and loss and damages is going to be front and center.

McFaul : Was it important or not that Xi Jinping chose to be there virtually? Or did that not really matter?

Burke: I'm not sure how much that mattered. We know that at the end the U.S. and the Chinese were able to huddle together virtually or not, and I think make some progress. And again, the glass half full view is that they're talking and collaborating in a way that was

nonexistent a decade ago, right? So that's good. Whether they were virtual or not, I don't know how much that matters.

McFaul: Okay. So another stakeholder in this big story : well, two more stakeholders, and then we'll end. One is the private sector, and then also academia and Stanford. Let's talk about both of them.

Elon Musk was just named Time's Person of the Year. I was in a conversation about this yesterday and he would not have been my choice, but nobody asked me for my opinion. But somebody said in his defense, "Well, he's the most important player in the world for saving the planet." I'm just using that as a hook; tell me what you think about the role of the private sector in these sets of issues.

Burke: The private sector is going to be immensely important in making progress on climate change. My view is that we are going to continue to muddle along as a global community in terms of making progress on mitigation.

McFaul: Okay.

Burke: If you look and see where the progress that we have made has come from – and I actually should highlight the progress that has been made – emissions are falling in the U.S. They're pretty flat around the world. They're falling in California. They're falling in the EU. So not just the per capita emissions, but overall emissions are now going down in many parts of the world, which is a huge success.

McFaul: I did not even know that. That is success.

Burke: It is a success. And the other part of that success is if you look at our projections of how much temperature is going to rise by the end of this century, even five years ago, you asked any climate scientist there, they would say four degrees or five degrees Celsius: four and a half. That was sort of the business-as-usual scenario.

You ask any climate scientist now, and they're going to tell you three degrees, which might not sound like much but is actually huge when we think about the impacts. So even in the last five years, the progress that we've made have put us on a trajectory that looks a lot more promising than where it looked like things were going even pretty recently. So that's good.

Where has that progress come from? It has come from, in part, some government policies that have been successful in mitigation. But really, it's longer decadal investments by both the public sector and the private sector in technologies that allow us to produce energy in a clean way.

Prices of solar and wind have come down 99% in the last two decades, which is an unbelievable improvement in our ability to produce renewable energy. This has enabled us to pretty dramatically reduce emissions around the world. It's now very cheap to produce energy in a clean way. Again, this is in part due to long term public support through taxes and subsidies for the development of these technologies, but really it's also private sector deployment of these technologies at huge scale.

So I would think of that as not an explicit public-private partnership, but really something that's working together to make the progress that we see. But again, the private sector has been critical in that whether it's Elon Musk getting us excited about driving fancy Teslas or the huge, amazing improvements we've seen in manufacture of solar cells in China. It's the combination of those sorts of things that that have led to the progress that we've seen. So private sector, yes absolutely important.

McFaul: That's really encouraging to hear. Final question: what's our role? What's Stanford's role, and the scientific community? Take whatever level of analysis you want. Stanford is launching – and you're very critical to it – a new school on sustainability and climate change. What do you see as the role of Stanford and the academic community in terms of this quest to save the planet?

Burke: I think we have two main roles. One is to really highlight what we know and get that information out into the world. The fact that emissions are flat or falling in many parts of the world is a success story, and it's one that people should know about. That's an important piece of information. The piece of information that we're already suffering climate damages, that people are getting sick that people are dying who should not be dying in this country from climate changes that we've already seen – I don't think that's well understood.

We talked about the polling numbers of who thinks they're going to be personally harmed. I think people are understating the damages, even the damages that we've already seen. We're poorly adapted to the climate we live in now, much less the climate of a two-degree warmer or three-degree warmer future. And I think the basic science on that is just not widely understood.

So I think a huge role for us as academics is not only to do the research to understand those questions, but really to get that information out in the world. The great thing about FSI and institutions like FSI is that's part of our mandate. It's the mandate to translate this research out into the broader world. The translation bid on what we already know is important.

But there's still some really important things we don't know. One thing I'm quite interested in is this question of adaptation. If we're going to muddle through mitigation, our two other options are adaptation – we're going to adapt to the climate change that's coming – or suffering.

McFaul: And it's that simple?

Burke: It is. And I would prefer to not suffer, so let's figure out how to adapt. But we don't actually know a lot about that. We don't really know what to do.

If you take the specific issue of wildfires that we talked about here in California, we have a sense of maybe how to slow the risk of extreme wildfires over a long timescale. We got to get out into forest, we got to do prescribed burns, we got to clear out all the dead brush, and things like that. That's going to take a really long time.

In the meantime, we're experiencing all these insane wildfires yearly now, and monthly almost. What do we do about it? How do we protect ourselves from the worst damages here? Do we stay inside? Do filters work? Do we wear masks? So even with very practical questions about what do we do when we're faced with these extreme events, we don't have great research on. So, those adaptation topics are a place where I feel like myself and colleagues in the new sustainability school hopefully can really contribute on the science.

McFaul: Fascinating. Great conversation, Marshall, thanks for being here. And thanks for your leadership at Stanford on these sets of issues. We really need you now.

Burke: Thanks a lot, Mike. Thanks for having me.

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