

Transcript of CC Conversation on Working Toward a Just Climate Policy

This webinar was held on May 4, 2021.

Tiffany Kelly: Hello, alumni, parents, friends in the CC Community. My name is Tiffany Kelly and I'm the Director of Alumni and Family Relations. Thank you so much for being here with us on Zoom today for a CC Conversation on Working Toward a Just Climate Policy. Some of you may remember the series we ran in person in 2018, and this is meant to be a continuation of that conversation. The Alumni Office has recently launched shared interest groups on CC's Alumni LinkedIn account and on Tiger Link. There is a shared interest group on climate change, and I hope you'll join to continue the dialogue from this evening.

Thank you to Mark Smith for agreeing to put this program together and for moderating. Thank you to my colleague Amber Martinez for doing lots of behind the scenes and to our ITS team, Don and Bob. I am so pleased and grateful to welcoming Marcia McNutt, class of 1974, James Bradbury, class of 1995, Juan Miguel Arias, class of 2012, Assistant Professor Mike Angstadt, and Professor Mark Smith. Thank you all for sharing your time and knowledge with us. Mark, I'll turn it over to you.

Mark Smith: Thank you. Thank you, Tiffany. Before I start my formal remarks, I just want you to know what a joy it is to just scroll down through the list of names. There's so many former students, advisees, and thesis advisees that I'm seeing, and people I know from other contacts. It's just so wonderful to see you here. So I want to thank you for lots of good memories.

Thank you for coming tonight or this afternoon or if you're in Norway, Wednesday morning. From 2017 to 2019, I worked in a productive collaboration with our alumni office to organize a series of CC Alumni Climate Forums in six cities: San Francisco, New York, Washington DC, Denver, Seattle, and Boston. I expect that many of you participating in tonight's webinar attended one of those events.

A positive side of the pandemic is that we're using new ways to interact, so when Tiffany contacted me earlier this year organizing this event, I thought she had a great idea. As I said, the best part is over the last week or so, I've been hearing from former students. So keep those emails coming in.

Our topic today is Working Toward a Just Climate Policy. In the past year, we've lived through events that offered different lenses on which to focus on climate policy. The COVID-19 pandemic draws focus to our understanding and use of science by both the government and the public.

Mark S.:

The George Floyd murder asked us to seek social justice across a spectrum of issues. United States rejoining the Paris Climate Accord, along with President Biden's commitment to US climate leadership, asked us to prepare and embrace the magnitude of this challenge. The hundreds of thousands now dying daily of COVID in India, the management of most of the realization that like COVID, we cannot solve the climate crisis for ourselves alone.

Our panel will offer a range of perspectives on climate issues. In alphabetical order. They are Mike Angstadt who joined the college in 2019 as an Assistant Professor in the Environmental Studies Program. His research examines how global environmental Politics and international farming law and domestic contexts interrelate. Mike is a JD PhD since 2013. He has served as a Research Fellow on the Global Earth System Governance, Research Alliance, where he contributes the taskforce on earth systems law. He's also a Member of the International Union for the Conservation of Nature's World Commission on Environmental Law, and the Global Network for Human Rights and Environment. He holds a JD with dual certificates in environmental and in international law from Pace University, a PhD in environmental politics from Colorado State University where he also completed an interdisciplinary NSF traineeship.

Juan Miguel Arias is class of 2012, has a PhD and Riley Scholar-in-Residence and also co-facilitator of the teaching research and environmental education semester here at CC. His work uses insights from educational psychology to address questions of environmental and social justice. Juan Miguel examines how culturally responsive teaching practice are in used in environmental education and how those practices impacts participating youth and their communities. He has a PhD in education from Stanford, a master's in developmental psychology from the University of St. Andrews, and has a bachelor's degree in neuroscience from Colorado College.

James Bradbury, class of '95, is Mitigation Program Director for the Georgetown Climate Center, where he oversees the center's work on reducing emissions from all sectors. James also manages the Transportation and Climate Initiative, a collaboration among 12 Northeast and Mid Atlantic States and the District of Columbia to reduce emissions from the transportation sector. James had worked with a broad range of stakeholders to help advance climate in clean energy policies at the federal and state levels. Prior to joining the climate center, he served as senior policy advisor for climate environment and efficiency in the US Department of Energy in the Obama administration. He's also work at the World Resources Institute and is a Senior Legislative Assistant in the House of Representatives. He holds a PhD in geosciences from the University of Massachusetts, an MS in hydrology from the University of New Hampshire, and a BA in geology from Colorado College. James is a former student from the days before college field trips were limited to jumping off cliffs of no higher than three feet. Times have changed.

Marcia McNutt is a Geophysicist and President of the National Academy of Sciences. From 2013 to 16, she served as Editor-in-Chief of the Science Journals. Prior to joining Science, she was director of the United States Geological Survey from 2009 to 2013 also in the Obama Administration.

Mark S.: During her tenure, the USGS responded to a number of major disasters including earthquakes in Haiti, Chile and Japan, and the Deepwater Horizon oil spill. McNutt led a team of government scientists and engineers at BP Headquarters in Houston to help contain the oil and capsule well. She directed the flow rate technical group that estimated the rate of oil discharge during the spill's active phase. For contribution, she was awarded the US Coast Guard's Meritorious Service Medal. Before joining the USGS, Marcia served as President and Chief Executive Officer of the Monterey Bay Aquarium Research Institute. She received a BA in physics from Colorado College and her PhD in Earth Sciences at the Scripps Institute of Oceanography. I can tell you from personal experience that Marsha is always a pleasure to work with. Likely a key to her success is that she is the most competent person I have ever met.

Each presenter will have will talk for about 10 minutes. If you have questions, please submit them under Q&A. We'll curate them for the question and answer period that follows the four presentations. At 6:15 Mountain Time, we will ask each panelist for concluding remark. Finally, I want to thank Tiffany Kelly, Amber Martinez, Don Herbes, Bob Smoli, David Hartman, Naomi Trujillo and Erica Hardcastle for their work to bring us here together. Now, I give you the President of the National Academy of Sciences, Marcia McNutt, class of 1974. Thank you.

Marcia McNutt: Okay, thank you so much, Mark. So I'm going to share my screen now so I can go through in 10 minutes the 50 slides or so that I have teed up for you here. So let me know when you're seeing the slides. Is that working?

Mark S.: Not yet.

Marcia M.: All right. It says, "Try again later." Okay, no, we're going to ... Let's see, let me exit from this and start it over again. Okay, let's try it again.

Mark S.: You've got it.

Marcia M.: All right, good. Okay. So Mark asked me to spend a little time talking to you about COVID and climate. So let's compare these two emergencies. COVID on the left, climate change on the right, both of them have proven to be very deadly. Climate change because of the wars and the droughts, the floods and everything. Of course, COVID-19 because people get sick and die. I would say for both of these emergencies, the science is clear. We know the problem, and we know how to address it. Both of them produce cascading consequences. From COVID, we see what started as a virus, impacted human health, and then went into social relationships, the economy and international trade. With climate change, it again is going to start with something that impacts the environment, but then goes to affect our economy, our health and international stability. Both of these two emergencies require urgent action and both of them are associated with built in inequities. We've seen the death toll from COVID very different depending on pre existing health conditions and the overall support with which individuals, their health is addressed.

Marcia M.:

The one big difference of the two is as I show on the left COVID-19, we can stop it in its tracks by reaching herd immunity through vaccination. For climate change, if only it was so easy as administering a shot. So we saw that science stepped up rapidly to confront COVID-19. Highly effective vaccines were delivered with unprecedented speed, the death rate fell by two-thirds. It used to be that six out of every 100 people would die. Now it's one, one to two. That's thanks to a better understanding of the disease that suggested effective therapies. The spread was mitigated via scientifically validated measures such as social distancing, wearing masks, etc. The research community stepped up to deliver advice on previously unimagined timescales.

With my own organization, the National Academy of Sciences, it used to take us two years to reach consensus on a topic. We were delivering advice to the federal government in days to weeks rather than years. An example is a report we did on allocation of vaccines, what would be a fair and equitable approach, This was done in a matter of weeks rather than years.

Okay, so the bottom line of what I want to say today is we need to bring the same sense of urgency to addressing climate change that we applied to COVID-19. Solutions, just as we did for COVID, must incorporate equity as well as the environment in addressing climate change. So there's an executive order from President Biden that says that this administration really is going to take seriously the climate crisis. We've got a narrow moment to pursue action, both at home and internationally, to avoid the most catastrophic impacts. He's also saying we must listen to the science if we are going to meet this moment. All of these are very welcomed words.

So how do we go about building an equitable and climate smart future? This is really going to require a convergence in the sciences. So for those of you out there who still might be students, if we're going to simultaneously optimize for multiple objectives, that is emissions control, a healthy environment, and social equity. This is going to require a new kind of scientist who's trained broadly, not just narrowly in one aspect of biology or geology or chemistry. It's going to require moving across disciplinary boundaries.

But my message to you today is there's also some really easy stuff we can begin today to address the climate crisis. It starts with decarbonizing electricity generation at the source, electrifying and uses to use that electric electricity, and all the while reducing electricity demand while increasing value, comfort and convenience. Because if we don't increase value, comfort and convenience, no one is going to want to accept these solutions. So for example, here's a report that the academy put out recently on accelerating decarbonization of the US energy system. It identifies these islands of certainty for 2020 decarbonization technologies, technologies that we have on hand, that we know are affordable and that we know are implementable. It also argues that we have to ensure a just transition to net zero. It doesn't do any good if only wealthy people can afford to put solar panels on their roofs, and then they're getting their electricity from the sun. The people who can't afford solar panels have to pay the cost of supporting the power plants that are carrying the base load in the community. So this report has a number of policy recommendations that we can start implementing today.

Marcia M.:

Then the second step is to electrify and uses. This is just an example of a map from the US that shows energy sources for building heat. Heating buildings is one of the biggest wedges in energy pie that we need to address if we're going to get to net zero. You can see that some parts of the country already use electric, the Southeast and the Pacific Northwest. But in other parts of the country, liquid propane, natural gas, fuel oil or other which is like up in the woods of Maine where wood fuel is plentiful too. If we want to electrify all end uses, then we have to make electricity affordable. I know that some parts of the country, the reason why heating up buildings is not electrical is because of the sky high electricity costs. We also have to develop the transmission lines to get energy from places where renewable energy is plentiful, like in the Great Plains and in the southwest solar and wind to the places where it's needed.

Then step three is boosting energy efficiency. This is something that we've done before, and we just need to keep doing it. This is an example from home refrigerators. The top blue line shows the volume of a typical home refrigerator, which has slowly crept up from the early 1970s to today such that refrigerators are larger, they hold more. At the same time, the green line shows the price normalized to \$20.10. It shows that the price has fallen by a factor of three to buy a standard refrigerator since the early 1970s, inflation adjusted. The red line shows the energy consumption in kilowatts per year. You can see that the energy consumption has fallen by a factor of four during that same time period. So it's clearly possible to improve the product, reduce its energy consumption and reduce its price all at the same time. We just have to put ingenuity to work.

So here are two reports that recently came out of the academy that deal with becoming more efficient and also with electric power. The future of electric power in the US explores how the grid needs to evolve to become a smarter, better grid with new technologies to address changing demand. It provides 40 recommendations to keep electricity resilient, sustainable, secure and equitable. All of these reports are available for free at the National Academy Press website. Then the other report on light duty fuel economy is talking about how to reach zero emissions vehicles with an important role in overall emissions reductions in the 2025 to 2035 range. Regulations need to be updated for these zero emissions and for self driving cars.

Now, another big push from the Biden Administration is on infrastructure investment. I just want to make the pitch now that this infrastructure investment is a once in a lifetime opportunity to create the infrastructure for that climate smart future. So it must include both information highways and physical highways, electric charging infrastructure, and those all important grids for transmitting electrical power.

I just wanted to say a word, we just finished last week, the first ever Nobel Prize Summit, which we hosted at the National Academy of Sciences called Our Planet, Our Future. In this summit, it addressed the joint problem of how to address climate change. At the same time addressing global inequities in access to power, information, education, everything you can think of.

Marcia M.: One plea that I made during this conference was that for the developing world, we really need to leapfrog technologies. Here's an African woman with a solar oven. We can't afford to help the developing world follow the same wasteful path to energy independence that the developed world did. We just don't have the carbon budget. But at the same time, we can't tell them that they can't develop, we have to help them leapfrog to renewable energy in the same way that they did a leapfrog to the cell phones and never bothered with the old analog ones that we used.

So let me just say a few words in closing about vaccine hesitancy and climate change denial. Both of these are issues that impact the willingness of society to take the mitigating measures required to avoid these cascades of consequences that I've talked about. So one thing that we set up at the National Academy was a new website called Based on Science that transmits at the level of an eighth grade education what people need to know about climate change and COVID. So questions answered such as, "Does global warming contribute to extreme weather events?" Yes, it does. Does ultraviolet light kill the Coronavirus? Does a flu vaccine affect COVID-19 test results or the likelihood of catching COVID-19? All of these are common questions that are asked. They were designed to address questions for which there was no reliable information on a Google search.

Then finally, we have to find a way to impart the essential climate understanding to people in ways that they are excited to access. An example is what we did with COVID. We went to IndieCade which is a big gamers convention and held a competition called Jamming the Curve, in which we asked video game producers to come up with games to teach people what they need to know about epidemiology. This was really exciting. We got hundreds of people involved, 50 different games. The one that won the prize was Cat Colony Crisis. It's about a group of kittens on a spaceship on a long distance travel, and they come down with a virus that has the potential to wipe out the cat colony before they can arrive at their destination. The gamers have to figure out how to intervene to save these cats. It's had 50,000 downloads already and it just came out a month or two ago. So I'll end there and look forward to questions. Thanks very much.

Mark S.: Thank you, Marcia. Now we'll turn to James Bradbury. James?

James Bradbury: Great. Can you see me and hear me okay?

Mark S.: Yes.

James B.: All right. Great. Great, terrific. I'm so happy to be here. That was fantastic, Marcia, thanks so much. From science to the policy and the politics, so I'm really happy to be here. Good evening, everyone. Thanks, everyone for tuning in. I want to thank Mark Smith for the invitation to be a part of this panel discussion. I don't have slides. Mark, thinking back you mentioned in the introduction, the kind of introduction back the student days. I remember your class, you have the distinction of being the professor who taught the class that I had the most fun in and that was also the most stressed in, all in one block. So congratulations for that. But I also learned absolutely a ton. I know my fellow students did as well.

James B.:

So just to help kick off this discussion, I'll say a few words about climate policy and the Biden administration, and then I look forward to the broader Q&A and part of the conversation. I'm sure as you know, we're just past the first 100 days of the Biden Administration, which was marked last week by the president addressing a joint session of Congress. If you've been following the news or watch the address, you know that climate policy is a major priority for President Biden. It's really dramatic and extremely welcome reversal from the former guy's approach, which was all about rolling back environmental protections and undermining the government's ability to cut emissions and build resilience to climate change, which is obviously so desperately needed.

So it's really an exciting time. I'm very encouraged by what President Biden has begun and what he's proposing to do. So right out of the gate, he started assembling a really remarkable team in the White House and at the agencies. As the saying goes, personnel is policy. The list of political appointments and staff, it just really illustrates a very serious whole of government approach that President Biden committed to and is taking with respect to federal climate action. For example, of course, John Kerry, former Secretary of State is the Special Presidential Envoy for climate, really focusing on the international engagement and making progress internationally on climate, which is so critical. Gina McCarthy, the former administrator of US EPA is President Biden's Senior Advisor for Climate Change, really spearheading the domestic side of this whole government approach.

Couple other examples, Jennifer Granholm at Energy, Gina Raimondo at Commerce both had solid climate policy records during their respective tenures as governor. I have to give a shout out to Pete Buttigieg as the Secretary of Transportation. I'm really impressed with Secretary Pete So far. I love that he rode his bike or a bike to his first cabinet meeting. I don't know if it was his bike or one of the bike rentals, but he does both. Secretary Deb Haaland, so we have a couple of course historic appointments as well, which I'm really heartened by. Secretary Deb Haaland, the first Native American to run the Interior Department. Administrator Michael Reagan is the first black man to serve as EPA Administrator, I could go on. I'll move onto another part of the talk.

But you get the sense that it's really a whole government, really a great set of leaders who are committed to a new, a different approach to their goals and with a strong focus on climate and equity. In terms of the policy moves, I'll start back in January, President Biden of course, rejoined the Paris Climate Agreement. He signed two expansive executive orders, which Marcia referred to earlier. Those were really about elevating environmental justice, integrating climate change into decision making throughout the federal government. So the first executive order on protecting public health and the environment and restoring science to tackle the climate crisis, that's what it was called, directed federal agencies to review and potentially rescind all of the environmental regulations finalized under the former administration. It was also important because it established an inter-agency working group that quickly recommended a new interim social cost of carbon. If you track these things, that's an important tool for helping to ensure that you're accounting for the damages of climate change when you're writing regulations.

James B.:

In that way, you actually count the benefits of reducing those emissions to help you get more stringent, more aggressive regulations.

The second executive order was really expansive as well. That was on tackling the climate crisis at home and abroad. It made addressing climate change a priority across all aspects of federal policy that the order directed all the agency heads to quickly create strategies and climate action plans for advancing climate leadership and recognizing the opportunity really that this presents to spur job growth, economic development by making the US a global leader in advancing clean energy technologies. There's a lot in there, not just on emissions mitigation, but also adaptation and resilience. So I'll focus just for the purpose of this discussion, environmental justice being a major focus of the executive order, it introduced the administration's Justice 40 initiative, which set the goal for 40% of overall benefits of certain federal investments to flow to disadvantaged communities.

So the Department of Environmental Quality and Office of Management and Budget were tasked with developing recommendations within 120 days to achieve this goal, focusing particularly on investments in clean energy, clean water, housing, transit, and workforce development to help begin to reverse the legacy of environmental injustice.

The executive order and environmental justice provisions, also let's see, in order to achieve executive outcomes, it also initiate additional really policies and processes. Process is really important, individuals and communities that have not had a seat at the table in the past need to be directly involved, right, in the policy development process and have a role in deciding which clean energy, water, transit investments will be best to meet their own community needs. That's key to reversing those injustices of the past. So that's the executive orders. I'll shift gears to a couple other executive actions and then talk about legislation.

So the executive. Yeah, so just two weeks ago during the Leaders Summit on Climate on Earth Day, and this is the the event where President Biden convened 40 world leaders for this summit during Earth Week, he announced the our nation's new nationally determined contribution for for to reduce greenhouse gas emissions by 50 to 52% economy wide, below 2005 levels by 2030. So that's a very ambitious target. The idea is to spur additional other nations to also take additional and more aggressive actions to reduce emissions. Through executive actions, there's a lot more that the administration can and will do in the coming weeks. So we should start hearing more and more about these proposed regulations. For example, just yesterday, the administration proposed a rule for phasing out HFC refrigerants with high global warming potential.

As soon as this summer, I think we can expect to see a proposed rule on emission standards for light duty cars and trucks. I think we'll see new regulations of Environmental Protection Agency to cut emissions from power sector, cut methane emissions from the oil and gas sector. These are some low hanging fruit areas where we'll see action, and also the Department of Energy, they're sure to set new efficiency standards for appliances and equipment.

James B.:

So the regulatory actions, I will note before I move on to legislation that those very well can face and may face legal challenges. We have a conservative Supreme Court, of course. They're going to be a tough audience. For a lot of climate regulations, I will say. But even if all the Biden Administration's future regulations do stand up in court, I can also say with confidence that a lot more is needed. That's where the legislative agenda becomes important to really make lasting progress on climate that is adequate to meet this challenge, we also need new laws and major new investments as well, and Congress is key there. That's a whole different challenge. Biden Administration, of course, is working with majorities but slim democratic majorities in the House and Senate.

So on the legislative front, first in early March, President Biden signed the American Rescue Plan Act of 2021, which is a almost \$2 trillion COVID relief package, which I'm sure you're all aware of. It is noteworthy, of course, that the bill passed through budget reconciliation, just in order to only require 51 votes to pass. There's no Republican support. So while I personally don't have a problem with that, it indicates how difficult it will be for President Biden to move legislation without filibuster reform. But that's my strong view on that. Nevertheless, the COVID relief package is also noteworthy because it included over \$30 billion dollars for transit agencies and investments in Amtrak. \$100 million is noteworthy for the Environmental Protection Agency grants to address environmental harms faced by minority and low income populations and also funding for air quality monitoring grants, which I'm excited about.

So next up, and this is really the big proposal is to address the investments that are needed with respect to climate. The president proposed the American Jobs Plan, and that was at the very end of March. He outlined a fact sheet that was posted on the White House website, you probably saw. It's a 10-year \$2 trillion package proposing major new investments in infrastructure, manufacturing, basic research. Minerals had some important policy provisions, I'll mention the investments quickly. First, almost 200 billion for electric vehicles and charging infrastructure. We heard a bit about that from Marcia, how important that's going to be, electrifying transportation.

More than half a trillion dollars for domestic manufacturing research and development and workforce development, another nearly half a trillion in clean energy tax credits to incentivize getting those clean energy technologies deployed and into use. I won't go through the whole list. But those are, I think, from a climate standpoint, those could really move the needle, including investments in the grid too, I should mention that. That's really billions of dollars for that. So the plan also proposes a clean electricity standard that transitions our power sector to 100% carbon pollution free power by 2035. A really important policy, really important as we've moved to electrify transportation and buildings, we really need a clean grid. Again, that all needs to pass through Congress.

I guess I'll end though just by briefly reflecting on whether I think President Biden's doing everything that he can and whether that will be enough to curb us emissions at a scale and on the timeline that's adequate to meet the climate crisis and this challenge. I think the answer is yes and no. So I do think the Biden Administration is doing just about everything they can, certainly in the first 100 days, to really move the needle on climate.

James B.: That's super encouraging, and their efforts are very sincere. But I think as we learned during the Obama years, there's only so much that one branch of government can do in four or even eight years. So I say that because we have the technologies available today, we actually have for a few years now to get on track to meeting President Biden's ambitious goals, like getting wind and solar out onto the grid and really scaling those up throughout the country.

But we do need those policies and we do need those investments to scale up quickly. For the power sector, the 100% clean energy standard will make huge progress by 2035. But that's less than a third of current US emissions, the power sector is. So the emission standards for vehicles, I mentioned, will be super, super important. That's going to help move us toward electric vehicles. But we're also going to need to transform how we get around. It can't just be always getting around in personal vehicles. We need those investments in transit as well, for example. Transportation policy is really critical. That's a thing to watch. Every five years or so, Congress passes a highway bill that in many ways, keeps us trending on the wrong path with respect to climate and equity and racial and social justice. Again, legislation is going to be key. So keep an eye out for that transportation reauthorization bill. That's going to be a key test. So lots more to do with buildings and industry. We can talk more of that perhaps during Q&A and look forward to that discussion.

Mark S.: Thank you, James. I know that some of you have had some trouble hearing since James started speaking.

James B.: Oh no.

Mark S.: It's not your fault because most people can hear. So the alternative is to go to the program on Facebook. Apparently people can hear the program on Facebook. So if you're having problem with your audio, try Facebook and the link is under Q&A. Okay.

Don Herbst: The link is in chat. Attendees can view the chat and get the link to Facebook from chat.

Mark S.: Oh, okay. Thanks. Thanks, Don. Okay, so now we'll turn to Juan Miguel.

Juan Miguel Arias: Excellent. Thank you all. Can everybody for the most part hear me? Okay. Let's see, at least, Mark, can you hear me?

Mark S.: I can hear you. We'll find out.

Juan Miguel A.: There we go. We're going to find out. Awesome. Well, yeah, I'm so pleased to be able to join in this conversation and honestly, to also go after James and Marcia just because there's so many connection points here that I think are really important to bring up. I want to start first, just like in this idea that James was saying, right? Of how people is policy, personnel is policy. That really is drawing from this reality, right? That people are going to be caring most about other people and not only in terms of what is currently going on, but future possibilities. So I want to recenter that idea around people because for me, I am a psychologist, an educator, right, very interdisciplinary researcher around environmental concerns.

Juan Miguel A.:

I think what a lot of people recognize in this day, but we need to translate this into action is what is happening in terms of impacts from personal action and going towards other people. So to give a very clear example of this, I think it's always very important, and I appreciate, for instance, the amount of times that CC conversations have started with land acknowledgments, the times in which we recognize the histories and what we're doing. But especially given the audience that I hope that we're talking to hear there are already these ideas of climate impacts, connected with impacts on people, connected with histories of land. What I want to push us to say is, what then is the actual implication there? Right? Very often, I think we go into, for instance, land acknowledgments.

But I would invite us to think have I for instance, visited a webpage for any indigenous land trust. Have I considered the ways in which I can donate my time, my money, right, my different resources that I have been given by being able to be where I am in very actionable ways as opposed to acknowledging land in an abstract sense, and then moving forward. So that's one re-orientation that I want to make is as we're talking about these ideas of climate policy, right, of coronavirus policy. The reason that policy is such an important starting point is because that is what facilitates action and shifting from right intention to actual nationwide action.

The second connection I want to make here in terms of people is exactly what Marcia was saying of this importance of connecting with on the ground work. I know, James, you also were bringing this up that any kind of work that we do is not necessarily just going to be like a top down governmental mandate, but really needs to consider the realities of like local people, the realities of local access and local constraints. I would even go so far as to say the reason that we're having this conversation right now, right, about rejoining the Paris accords, about considering all of these different infrastructure changes, as opposed to having an alternative conversation, which is, what do we do now that it's 2021 and we're still not in the Paris Agreement. Right?

The reason we're having this conversation is because of local grassroots organizers. I would even say, right, specifically, grassroots organizers in the state of Georgia. Right? So to recognize that this is the reality of how climate work gets done, racial reconciliation gets done, right, any kind of national as well as international equitable work gets done. That needs to motivate us as individuals to actually shift this idea from an awareness of problems and their needed solutions to then non negotiable practices. Right? We very much know that. Climate change is something that will need to have just an equitable components as like central ideas there.

So that is not what my main message is. What I'm trying to say is there needs to be this connection of what are the barriers to implementing that awareness. First, taking care of those. Second, recognizing that those are immediate and non negotiable, non avoidable barriers, it's not that it will be great if climate change mitigation happens in a just way. I strongly believe, right, the reality is without a just approach, climate change, mitigation will not happen. Right? That is I think a reframing that we really need to take seriously.

Juan Miguel A.:

I kind of think, to put this again with another specific example, especially in the context that we've been, working through as a nation and as individuals this past year, one of the most impressive ways in which I have seen like a reframing of this was with Abraham Kennedy's Conceptions of Right, how to be anti racist. These ideas around right there is racism, and there's anti racism. I think that, obviously the entire body of work and ideas around what we do about that is important. But the move is so especially powerful here because he invites all of us to recognize that we are implicit in this idea of there's racism or anti racism, and those are the choices, right? It's not a false binary. It is a spectrum but it's this idea that there is no acceptable moderate position in terms of racism, right? There is no acceptable slow start.

I think that same type of reframing of there is a very negative, very unpalatable social situation. There's the response, is similar to how we need to consider the individual and the social aspects of climate change. Right? So I consider myself an environmentalist I consider myself connected to that, but I don't even so much want everybody else to be pro environmental or pro forest. I am more of like, "I just need you to be anti environmental destruction," right? Anti extremely damaging floods and hurricanes. Right? Anti extremely consuming canyon wildfires, right. I think the painting of this idea of well, there's either business as usual, and there's capitalism or you're going to be radical and tree hugging and doing those things, already creates a false narrative there that climate is something that can be like taken on the sidelines.

So that is the main thing that I would want to present is it really is going to take a reconception of what it means to be in this conversation and what it means to be for the climate or against the climate in a way that that I don't think we have taken seriously and in a way that we need to involve larger circles of people as opposed to assuming that we can invite circles to the climate conversation. I just want to close real quick also, let me see if I can pull this up.

In the spirit of that idea, I think it's been said many times and many years in the past before, I'm really glad that Marcia brought up this idea of urgency because I feel like urgency is a really important way of considering about this, but also it can create a situation where decisions and voices and all of these other conceptions and multiple stories, we don't have time to listen to them because of the urgency. I would caution us against that.

I think this urgency is actually something that a lot of communities and a lot of people have been feeling for years, right? To recognize that reality of this is a long burning urgency, this has been what a lot of people call like slow violence. Now, right, we're certainly maybe at a tipping point. But that tipping point has been announced to many of us for a long time. To just point that out here is one of my favorite quotes, and I got the chance to like reread it as part of a book club this year. Maybe some of you all were in it. But Audrey Lorde in a chapter that ... Please keep in mind, this chapter is called Learning from the 1960s, and it was written in the 1980s. Right?

Juan Miguel A.: Says, “Each of us must find our work and do it. Militancy no longer means guns at high noon, if it ever did. It means actively working for change, sometimes in the absence of any surety to change is coming. It means knowing that coalition like unity means the coming together of whole self actualized human beings focused and believing, not fragmented automatons marching to a prescribed step. It means fighting despair.”

Right? So this idea that there is no one single way of doing environmentalism, there is no single way of doing climate justice. At the moment, climate scientists are just playing defense, they’re just continuing to build evidence that if we do not do something, things are going to get worse. But that is a defensive maneuver. We need social policy, we need economic policy, we need political policy to actually shift that into a different kind of reality.

Mark S.: Thanks, Juan Miguel. While I am on, there was a question. Somebody didn’t catch the reference to the book on anti racism that you mentioned. So could you respond, type your response to that question. So finally, we have Mike Angstadt. Mike, you ready?

Mike Angstadt: Ready. Thank you so much. I have a couple of slides to keep myself honest here. So hop aboard. Can everybody see this and hear me okay? I’ll assume no news is good news. So thank you so much for this opportunity to join. For the next 10 minutes, I’m going to be speaking about how we can consider climate equity and justice in international policy. So while I’m grateful to teach and research about these questions, I wanted to begin by emphasizing that CC actually has a number of faculty members who are actively engaged in this area. So if these questions feel compelling to you, I’d urge you to seek out the teaching and research of Marian Horta Quinn, Kareena McKendree, Jean Lee, Sarah Haltzinger and many others. Right now, CC is a vibrant, supportive place to consider these questions.

Climate change presents Perhaps the ultimate collective action challenge. There’s nearly 7.8 billion humans alive right now. But we all share just one planet. So alongside the scientific complexity, we face huge ethical dilemmas. How do we incorporate and address the needs and wants of these 7.8 billion individuals? So in my 10 minutes, I thought that I’d bring three broad themes to our conversation about justice and equity and climate policy. First, the theme of participation. Second, the theme of venue. Third, the theme of temporality. So first, participation, a big complication is that climate change is affecting us all but unequally. Historically, some countries and some individuals have benefited from greater carbon emissions and some individuals and countries will be burdened sooner and differently than others. These inequities, as we’ve been discussing this evening raise big questions about who can and should be able to participate in global climate policymaking.

I think that expanding meaningful participation would provide a really potent first step towards more just climate policy. In my classes, students often note that demands by youth and grassroots organizations give them hope in the area of climate change. International negotiations have made some space for the voices of diverse climate activists. But global climate negotiations are still highly scripted and their formal mechanisms often serve to reinforce the status quo.

Mike A.:

So how can we meaningfully expand participation in international climate policy?

Well, first, our current international policymaking tends to separate issues. We address climate policy through one process, biodiversity through a second, sustainable development in a third. This approach reflects dominant Western legal approaches where we tend to parse individual issues out. But it doesn't really reflect the interconnected reality of environmental challenges. I think that we could aim to incorporate more holistic perspectives, place less emphasis on political boundaries and more emphasis on natural processes and interconnected earth systems.

One way that we could consider doing this is by giving more attention to the science policy interface and climate negotiations. In other words, not just incorporating scientific information, which already occurs, but by giving more voice and agency to those who can interpret their science and their understanding of earth's systems. Second, we might consider more broadly what constitutes valid knowledge claims in international climate policy and complement Western science, which already underpins many climate negotiations with ways of knowing that can more richly contextualize the climate challenge and how we as humans engage with the natural world. Then third, and most broadly, all climate policymaking is framed in deeply anthropocentric terms. In other words, it's fundamentally framed to protect the environment in order to preserve the interests of humans.

In addition to thinking about participation in climate policy, the second broad theme that I wanted to highlight is the concept of venue. I feel really strongly that where individuals can participate holds huge implications for the type of policy that will emerge. As I noted just a minute ago, climate change affects us all. But the sites for making formal international climate policy have historically been quite exclusive. So how might we begin to address this challenge? Well, first, let's rethink the sites that we've historically relied on for climate policymaking.

Venues like the United Nations can bring diverse participants and interest together and push them to seek consensus, but they don't guarantee equity in terms of participation. Not all countries have equal resources or capacity to engage in negotiations and attend climate summits. Not all groups can participate in all stages of climate negotiations. So what to do? Well, alongside the challenges of the past year, we've seen the value of new formats for information exchange including avenues for virtual engagement. Approaches like these can increase the accessibility and equity of policymaking. Likewise, UN climate negotiations have historically limited the participation of non-governmental groups like civil society, grassroots organizations and citizens, and has served to restrict the number of statements these types of entities can make and the length of those statements. I think huge benefits can be realized by lowering barriers to participation in an effort to raise up these diverse viewpoints.

Second, I think we should rethink our singular focus on what the United Nations does for international climate policy. Expanding what we view and consider as relevant policymaking sites can greatly expand participation and provide more spaces to address justice challenges. So while there's a number of examples, I think the court systems of countries around the world provide a great example here.

Mike A.:

We know that international negotiations and agreements can prove difficult to enforce in practice. But domestic climate policies, including orders issued by courts, can avoid this challenge. With nearly 200 different legal systems around the world, we have this vibrant patchwork quilt that can expand participation and address broad challenges, while also getting at the unique characteristics of unique settings.

To illustrate this really briefly, I wanted to talk about a recent case from the Netherlands. When Dutch activists grew dissatisfied with the pace of progress towards carbon emission reductions, they sued the government. In a landmark ruling, a Dutch High Court agreed that the government needed to act more urgently to protect its citizen's human rights. Unlike international agreements where emissions reductions are negotiated and voluntary, this court order that was brought by an environmental organization and Dutch citizens is binding, it has to be followed. Although the immediate effects of this court order are limited to the Netherlands, domestic climate actions are increasingly interconnected as countries take note of the actions of others and ideas spread. Although this [foreign language 00:56:41], opinion I was just speaking about was only issued about a year ago, it's already sparked similar lawsuits in at least eight other legal systems, including Belgium, France, Ireland and New Zealand.

In addition to thinking more inclusively about who participates in climate policy and where, just and equitable climate policy also requires us to think about the issue of temporality or crafting policy today that accounts for the rights and interests of those to follow. This idea of considering future generations isn't new. In fact, a very early international environmental agreement, the Stockholm Declaration, highlighted the importance of preserving a healthy environment for both present and future generations. 50 years later though, we're still struggling with the challenge of how to do this, especially in the context of climate change. While there's definitely no easy solutions here, I think that another recent court order offers us a valuable example. Just last week, a high court in Germany issued a landmark climate ruling. The court there found that the German government's policies were inadequate, and it ordered the government to protect the human rights of future generations of Germans. Interestingly though, it did so by ordering the government to demonstrate tangible progress now by revising its national climate policy by the end of this year and by beginning to ratchet down emissions in succeeding years.

I think that in the area of international climate policy, where commitments are often framed in terms of metrics that must be met by a future date, by 2030 or by 2050, we often lose sight of the fact that policies to address challenges decades from now will build up on the actions we take today. So by forcing action early now rather than by a target date later, it doesn't only help future generations to meet their goals, but it can support greater environmental quality, equity, and justice now.

Obviously, there's many ways that climate policy could be made more just and equitable at the international level. But I hope that these brief vignettes about participation, venue, and temporality can contribute a sense of possibility to this conversation.

Mike A.: I'll just say really briefly in a note of conclusion that for those of you who work in the climate space that are here tonight, I know that our students would love to hear your perspectives and connect. So to echo Tiffany's comment at the beginning, I hope that many of you will reach out in the days and weeks to come. Thanks a lot.

Mark S.: Thanks, Mike. So why don't we have all the panelists get on video? We have a lot of questions. As I look through this whole list of questions, I'm becoming increasingly impressed with how somebody handles this. So I then start with a question from Robert Manca to Marcia McNutt.

Dr. McNutt, as an NHS retiree with background in space physics, I have followed the climate debate. A concern is that some climate change proponents point to every significant weather change even over a decade as evidence for climate change. It seems to me that advocates must stick to verify changes such as global temperature or sea level rise, and then point out their effects, especially in NAS positions. Another difficulty compared to COVID response is that we don't see immediate large scale death. The effects of climate change are less obvious. So the arguments need to be crafted more carefully.

Marcia M.: Okay, so let me deal with the first part, which is the whole field of climate attribution. How does one decide when a weather event can be linked to the climate? Well, first of all, there is no way to say that this hurricane or this drought was caused by climate change. Rather one talks about probabilities. So of course, this is all easier if you have very long time series. In a Land of Our Climate Attribution Report that was issued by The Academy A few years ago, they address the problem in several ways. First of all, they had to find that there was a clear physical mechanism by which climate could be linked to the phenomenon.

For example, if one can't come up with a physical way that climate would affect the incidence of tornadoes, for example, then they would not say that the two were linked. So there had to be a physical mechanism. Secondly, there had to be a long enough time series, going back decades that showed the incidence of the phenomena and then could be used to look at how it was changing in intensity and frequency with time. So those studies have been done. No surprise to anyone, two of the climate attributions that came up top on the list were droughts and floods. Either have it, these extremes have too much water or too little water by the changing climate.

Since that study was done, more evidence has surfaced on hurricanes becoming more intense. That's because there's more heat in the ocean atmosphere system, particularly in the upper part of the ocean, which is driving them. But the question is appropriate that one needs to have both the mechanism and the data to show it. In terms of the second part of the question, and that is whether impacts are being felt. Basically impacts are everywhere. But we're not always making the connection between what we're seeing and climate. It's very different. How climate is affecting someone in Alaska is very different than how climate is affecting someone in Florida.

Marcia M.: You're exactly right that sea level rise is the big issue in Florida. But it's not necessarily the biggest issue in California, which has an emergent coastline, although there still are parts of California that are feeling the problem. If you go up to the North Slope of Alaska, and I visited there, what the issue is, is the retreat of the ice means that there is enhanced erosion of the coastline, which used to be protected by ice. Entire indigenous communities are having to move inland because the ground is literally falling away below their feet. So the impacts are different everywhere, and that's different than COVID where it doesn't matter if you're a person in Italy or the US, the impacts are pretty much the same.

Mark S.: I just want to say to the panelists, if you want to jump in on anybody's question, feel free. I got to direct the next one from Chim Bernest to Juan Miguel. What hidden inequities exist among the various zero emissions power sources?

Juan Miguel A.: Yeah, that's a great question, and I think one that I also think Mike could answer, Mike and James both, and all of us kind of addressing what Marcia was saying at the very beginning with these ideas of national and international questions of equity. I think very often as we're thinking about the urgency of this climate crisis, and we're thinking about how do we maintain as the Western's assumptions about like what needs to be maintained of energy consumption and technologies, without a recognition of that leap frogging that is also going to be needed, as Marcia was saying, right, with other developing countries, right.

I would say not even developing countries, but just any spaces and communities that are in what we would call like a global south orientation to climate. That really needs to be taken seriously because I think that will be one of the biggest inequities that we might knowingly or unknowingly continue to contribute to is in this urgency, we don't recognize the international power imbalances that happen when other countries are forced to react to the sudden quick jump towards renewable energies that the US might be making. So that would be one of my biggest things is I actually think it's in terms of international equity, rather than maybe something that happens domestically.

Mark S.: Mike?

Mike A.: Yeah, if I could just hop in there. I thought that was a really interesting point. It gets me thinking a lot. Juan Miguel, you were speaking earlier about reframing of how we think about these issues. One of the big sticking points at the international level right now is figuring out how to account for greenhouse gas emissions reductions and how funding will be allocated from wealthier countries to those with fewer resources. I think that a lot of this dialogue is being driven around what the wealthy countries are willing to commit, what they're willing to bring to the table. But perhaps some of the hidden inequities here lie in the process that I was talking about earlier. The fact that some of the countries that have the fewest resources to adopt these zero emission sources are also the countries that historically have had the quietest megaphone at the international negotiations. So I think that this is just one example of how process can have a big effect in promoting greater equity in outcome.

- Mark S.: Marcia.
- Marcia M.: I can just jump in with a really specific example of this inequity that's locally here in the US. I'm at my home in California right now. We have solar panels on our roof and on our garage. Our electricity bill is \$100 a year, \$100 a year. But that's because we've got the space to put all those solar panels up there. If someone is living in an apartment, they probably don't have the access to the roof nor the right to put up solar panels and have their electricity \$100 a year. Now here in California, the build out of solar energy has actually been fastest for individual property owners putting out their own solar panels. Just lately we've started, the government has started, and the state have started to put in large solar farms that allow the electricity to be available to everyone. But it's the difference between is this a personal thing you do or can you do or is it something that the government does? If it's all left up to individuals, then the inequities multiply.
- James B.: Yeah, I'll just quickly make a point. I know it's not energy technology per se, but our existing infrastructure, highways have been built in incredibly inequitable ways and frankly, racist ways through low income and black and brown communities decades ago. But this problem continues to persist in terms of how our highway infrastructures are built out, and that includes other aspects of transportation infrastructure like ports and rail yards. Those are major contributors to the air quality, environmental justice issues in places like New Jersey or in Newark, where they have just extremely bad exposure to diesel emissions, that are huge rates of cancer and that sort of thing. Just to quickly say a word about a possible solution. This is one thing I like about the Jobs Bill that President Biden is proposing is \$20 billion for investments to remove roadways that have had been cited in this way and find ways of rejuvenating those communities and moving that traffic somewhere else.
- Mark S.: So we have a question from Johnny Gamble, that's probably we would like to get everyone's input on. That is, what is the strategy for convincing conservative members of Congress and the constituents of the absolute necessity of passing legislation to combat the climate crisis? I'd also add this addendum to Juan Miguel, maybe we're looking at from what he said about grass roots efforts, maybe this is the wrong level focus.
- Marcia M.: Well, I'm perfectly happy to jump in. You have to understand that our elected officials are just a reflection of their constituents. It's going to be very hard for them to go get out too far ahead of what the voters in their district want. I think it's really important on all of us to make sure that we have marshaled experts who are home grown in those communities. For example, people who maybe went to Colorado College, but came from Tennessee to talk to their elected officials because the fact that you grew up in that community means that you have credibility that someone coming from MIT or Berkeley is never going to have. So I think one way to do it is to find those voices that will be viewed as representative of their voter base and amplify them in any way we can. But encourage them to become advisors to their elected officials.
- Mark S.: Mike?

Mike A.: Sure. Thank you. Another challenge that I was thinking about with this question, which is really fascinating one, we were just thinking about this in my class this morning, is this temporal aspect. Those legislators that you're asking about face reelection two years from now. Right? They face reelection six years from now. But a lot of climate policy is framed in terms of what's going to happen 20 years from now, or 30 years from now. So if you have really finite political capital, how does this feel like the most compelling issue to put your political career behind?

So something that I feel would be really valuable and important, i framing things, to go back to this recurrent theme in this panel, in terms of the benefits now? Right? So it'll be really interesting to see how this infrastructure policy debate plays out. Because like infrastructure policy, climate policy is one of these areas that will have long ranging effects, long ranging benefits. But how can we highlight the benefits in the near term and make them feel tangible and something that if I were a politician, I would want to put my weight behind?

James B.: I'll be a little bit contrarian, I think on this. I'm a little more jaded on the political aspect of this and the tribal politics that we suffer from at the federal level. I absolutely agree with the points that getting the right messengers and the right messages is really important. It's important to continue to try to be persuasive. But our current sort of tribalized politics, particularly at the federal level, there are Republican governors, Governor of Massachusetts is doing great work on climate, but at the federal level.

I mean, carbon pricing is an incredibly conservative concept as a policy, leaves it completely up to the economy to sort of sort out the most efficient strategy. But you put something like that on the table with Republicans. For years, there has been, sorry to be partisan. But for years, there's been just really aggressive push-back and complaints about destroying the middle class and that sort of thing. So I do think we need political reform. I think we need all sorts of changes to the way we elect people and the amount of money in politics and that sort of thing. That's a whole longer conversation, but I think that's critical.

Juan Miguel A.: Yeah, that's a fantastic way of addressing that also, James. I would just add to that part of why I say one of the biggest things that I would take away, if nothing else, is this idea of reframing is, right, because it is right now currently acceptable to be doubtful about any action, right? It is currently acceptable to listen to your constituents in a six-month time window as opposed to a five-year or 10-year 50-year, longer time window. Right? That kind of acceptable business as usual is again with the idea of critical urgency, something that we really need to assess, right? Thinking in terms of like a political standpoint, there are times when politicians were not only just temperature gauges, but also thermostats. Right? I don't know if anybody has heard of that expression.

But elected officials do despite what we say about they're just responding to constituents, have the power to start shaping conversations and start making realities of Green New Deals and other types of ideas, possibilities. Right?

- Juan Miguel A.: So to try to say that it is just a response to a constituent base, like, makes it really challenging when those constituent bases are so different, and this problem is so uniformly impacting of everyone. Right? So I do think it is going to take a shifting of what is and is not tolerable in terms of this conversation, right? Of there is no longer a middle ground on climate, right? There's no middle ground on like, "Well, I like the climate but but not not too much to be radical." Because I feel like that is the kind of conversation that makes it very easy to shift towards inaction.
- Mark S.: So I think this is a question that a number of you might want to address. It was actually the very first question that was asked. What are the solutions for climate justice, besides technology?
- Marcia M.: Seems a question for Mike.
- Mark S.: Okay. Mike?
- Mike A.: Yeah, thank you. I'll keep my remarks here brief at the risk of sounding a bit like a broken record. But I really think that one of the most valuable solutions for advancing climate justice and climate equity, besides thinking about technological solutions and thinking about policy prescriptions, is to think about process and to think about who has historically been included and who has historically been marginalized from this area of policymaking. In my remarks, I gave a few examples of what this might look like. But I feel like a lot of the public dialogue around climate change centers on the issue of climate change itself, when a lot of the justice and equity concerns and considerations and opportunities in climate change center around increasing participation and lifting up those marginalized voices. So I'll stop there.
- Mark S.: Anyone else? Well, I'm going to take the liberty. James?
- James B.: I was just going to agree with Mike, I think the process is absolutely critical. I guess we all made that point before. But it was an interesting question. I don't usually think of it as technologies as being the solution. I've come to think of it so much as being process based. But obviously, we need it all. Thanks.
- Juan Miguel A.: I'll just add, like part of the reason, again, in the spirit of this conversation around like just climate policy, the reason that justice and equity need to be part of that, those initial conversations and structurings. Right? We're talking from ecology here, in complex ecological systems. You have different starting points, and that will get you to qualitatively different end points. Right? It's not just kind of a little bit of a shift of the same, right, like, "Oh well, the scientists are going to figure this out, and then we will communicate it, and then we'll see what happens."
- Being able to start from a different person-focused, equity-focused, future sustainability-focused starting point is going to get us to a different end point than not. Right? I think that's like an ecological reality that that we need to remember for ourselves as being in this political ecosystem as well.

- Mark S.: I'm going to ask a question from former advisee. I'm going to ask this question, because I know that that Marcia is on a panel next week I believe on geoengineering. This comes from Nathan Lee Amons. Are there any laws or agreements that prohibit unilateral and intentional geoengineering? I say intentional because having millions of cars on the road and many other things we do normally is a form of geoengineering.
- Marcia M.: No, there are not. For example, there's the London Convention that prevents dumping iron in the ocean to stimulate plankton blooms and draw down CO₂. You can't do that because of the London Convention. But there is nothing that would stop an individual nation or even a corporation from sending some balloons or airplanes up in the air and emitting sulfur dioxide and engineering the climate in ways that they might think are beneficial to their own interests. There's no way to stop it.
- Mark S.: Mike, you want to weigh in on this?
- Mike A.: Oh, I'd agree completely. The only thing I'd say really briefly is that this is one of the challenges with formal international policy. The way we've historically thought about it, that enforcement is a big challenge. This is one of the big complications that, as these different laboratories have solutions to really complex processes play out. There's a huge collective action issue and figuring out who's the ultimate arbiter of these questions that's really big.
- Marcia M.: Not only is enforcement a problem, but even attribution is a problem. If some nation put up some geoengineering and suddenly there was the wheat harvest in Canada failed or the rice harvest in Southeast Asia failed, saying that it was because of the geoengineering would be impossible because there's no strong science linking the release of the particles to agricultural production or droughts or anything else.
- Mark S.: So I'd like to give now each of our panelists an opportunity to make a closing remark or answer a question, answer their own question. So please. Well, I guess I'll start with Marcia.
- Marcia M.: Yeah. Well, thank you. This has been a great discussion, I really enjoyed learning from everyone else on the panel, I would say that we got the deal done for COVID. It's not finished yet. But at least we know the solution's in sight. We need to bring that same urgency to the climate problem, and do it in an equitable way. As I said, there's low hanging fruit out there that's not going to get us all the way to zero. But it's going to solve 60% of the problem. We need to start doing that now while we get the technology in hand to solve the remainder of it.
- Mark S.: James?
- James B.: Sure, I'll go next. I just agree completely with that point. That it's so important to start now. We really do need policy to do that at the scale and the speed that's necessary. I also want to say, of course, that it's just been such a pleasure.

James B.: It's really, really fun to be part of this group. I'm learning a lot from my fellow panelists, and I thought the questions have been great. It's a terrific forum. I'm just thrilled that the conversation has shifted around climate policy to climate justice and recognizing the critical role of equity in solving this problem. So it's a welcomed change. It's going to be a challenge for a lot of people who were used to the way things used to be and the way things have operated in the past, but it's a challenge we all need to rise to as we also tackle emissions.

Mark S.: Juan Miguel.

Juan Miguel A.: Yeah, thank you all. Really great to be in conversation here. Yeah, I think it really goes to show just the importance, right, the non negotiable importance of listening from multiple perspectives and being able to create possibilities that address those perspectives rather than deciding what is the most efficient or the optimal from those. Exactly what James was saying, like personnel is policy, and the thing that I would try to remind all of us here on this call, is that you are personnel, right? Personnel is you.

We were a few thousand volunteers and people and votes and everything, like I say, from having a completely different conversation right now in May of 2021. I think that that's kind of very easy to overlook when now you move on, and the US is now back in the Paris Agreement. Just to invite us to think about what is it that made that possible and how do we keep doing that, right? So the personnel is you. That happens in both small ways of all of the individualized climate actions that we take, but also in this very serious idea of collective action for economic and political reform.

The last thing I would say is just thinking about the importance of that like what is negotiable and what is non negotiable. Again, what does that mean in your individual life? Right? All of our lives are going to be transforming in very big ways. So I think it's an important reflection to say like, "How do I want my life to transform or what do I want to look back on and say like, this is what I transformed?" Because it's going to happen anyway in some ways or another. So this is like an invitation for us to realize that we're on that crux. Thank you.

Mark S.: Mike?

Mike A.: Sure. I just wanted to say what a ridiculous honor it's been to be on this panel. Thank you so much. As we think about equity and justice and climate policy, we've spoken a lot about the need to start now and to rethink not just substance, but process. There are low hanging fruit out there. But I think the really fascinating thing is that that low hanging fruit, it looks different in every growing zone. So incorporating different voices, bringing different people into the conversation, I would just start just to view that not just as a challenge, not just as an obligation, but also a really wonderful opportunity to approach these grand challenges. Thank you.

Mark S.: Well, and I want to thank all of you for participating in the panel. I want to thank the participants for attending and the great questions. I'm sorry that we didn't get to all of them. But let's do this again. I would encourage you to let the alumni office know that you enjoyed this program and that this is the type of programming that you'd like to see. So thanks to everyone. I see Tiffany, reappearing.

Tiffany K.: Just adding my thanks. Thanks to the panelists. Thank you to everyone for joining. Take care.

Mark S.: Take care. Bye bye.

