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WEBINAR

ADDRESSING CLIMATE CHANGE IN U.S. DEFENSE STRATEGY AND BUDGET

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P R O C E E D I N G S

MS. MALONEY: Good afternoon. I'm Suzanne Maloney, vice president and director of Foreign Policy here at the Brookings Institution. On behalf of everyone at Brookings, it's my sincere pleasure to welcome you to what promises to be a terrific conversation with Department of Defense officials and Brookings' scholars to consider the ways in which DOD is responding to climate change.

As the Pentagon's climate risk assessment published by the department in October of 2021 stated, climate change is reshaping geostrategic, operational, and tactical environments with significant implications for U.S. national security and defense. Climate change has profoundly transformed the conditions in which our military operates, and it will continue to impact everything that we do in this arena.

Furthermore, as recent U.S. assessments have illustrated, environment degradation and climate change could have a substantial impact on U.S. military training facilities, installations, and theaters of operation. Simply put, no nation and no military can escape the devastating impacts of climate change. And these considerations must factor into our planning at every level across all of governments and all of society.

The ways in which the Department of Defense responds to this threat will shape the perceptions of American's global leadership and our ability to project influence for decades to come. The United States must address the immediate challenges of safeguarding military installations and include climate change as a fundamental part of national security strategic planning. See, little changes in the Artic and South China Seas have enormous potential to impact the ways in which we interact with allies, partners, and other nations around the globe.

The resilience of our military infrastructure and capabilities against flooding, wildfires, high temperatures and other effects of climate change must be strengthened to ensure critical functions and missions are carried out in the face of any climate crisis. In ensuring that DOD capitalizes on the clean energy transition will allow the department to

operate machinery more efficient and cost effectively.

Ultimately, these are steps that the United States must take to maintain our competitive advantage in the current and future warfighting environment to ensure our security and peace. Now, and in the years ahead, our national security depends on our progress towards building sustainability at home and abroad.

It's for all these reasons and more that I'm really pleased that we're hosting this important discussion this afternoon. We come together at a critical time, and we will focus on how the challenges of climate change are reflected in DOD's budget request to Congress in the National Defense Strategy and in engagements with allies and partners.

Our session today promises to be a very interesting and illuminating virtual conversation. We're joined today by DOD officials, Principal Director for the Artic and Global Resilience Greg Pollock, and Senior Advisor for Climate to the Secretary of Defense and Chief Sustainability Officer Joe Bryan.

Let me introduce them briefly along with my Brookings' colleagues who will join us today in this conversation.

Prior to current rules, Greg Pollock served as the secretary of defense chair on the faculty of the National War College where he taught courses on global national security strategy, U.S.-China relations, and the implications of global climate change for national security. He also served as acting deputy assistant secretary of the defense for security cooperation. Greg even has a prior Brookings connection as he was previously selected as a recipient to the Brookings' legislative fellowship.

Prior to his appointment, Joe Bryan was principal at a consulting practice focused on clean energy technology and its intersection with national security. Joe previously served as deputy assistant secretary of the navy for energy and earlier in his career he led investigations for the Senate's Armed Services Committee and served on the professional staff of the Senate's select committee on intelligence and permanent subcommittee on investigation. He is a former senior fellow with the Atlantic Council's

Global Energy Center. Welcome to Brookings to both Greg and Joe.

Let me introduce my colleagues here at Brookings who will be joining us today. Two leading Brookings experts from our Energy Security and Climate Initiative. Samantha Gross is a fellow and director of our Energy Security and Climate Initiative. She brings long experience in government and in the private sector on these issues and she is a prolific commentator on climate and energy security here at Brookings.

David G. Victor is a nonresident senior fellow at Brookings and also serves as the Center for Global Transformation endowed chair in innovation and public policy at the School of Global Policy and Strategy at U.C. San Diego and is codirector of the campus-wide deep decarbonization initiative. Thanks so much to Samantha and David for being here as well today.

I'd like to highlight the important work that they do as part of the wider Brookings initiative on climate research and actions which brings together experts who are shaping workable solutions for local, national, and global leaders to meet the climate challenge and seize opportunities for climate resilient growth around the world.

A final reminder that we're on the record today and we're streaming live. So please join the conversation by sending your questions by email to events@brookings.edu or by a Twitter using the hashtag #DODClimate.

With that let me begin the conversation. Greg, I'd like to turn to you first. The climate is changing rapidly. Devastation from extreme weather events are a huge threat to our nation security. I wonder if you could start by giving us an overview of how DOD is tackling the challenge and integrating climate considerations into DOD strategy especially the National Defense Strategy.

MR. POLLOCK: Sure. Thank you very much, Suzanne, for the kind introduction and to everyone out there participating virtually in today's session. It's a real honor for me to sit here alongside by my friend and colleague, Joe Bryan, our distinguished Brookings colleagues and esteemed fellow panelists.

I just want to say upfront, I know Assistant Secretary Dalton, Elizabeth Dalton, was quite keen to be here for this session. It was very much looking forward to it, so I hope understand that it was an unavoidable weather-related transportation delay was the only thing that kept her from being with you all and the wider group here. But she will look forward to getting back with all of you on these issues and others before long.

I hope it's needless to say at this point, but the security implications of climate change are, of course, profound. And I'm gratified to report that the Department of Defense is working very hard to reduce our contributions to climate change while simultaneously building resilience within the department and with our allies and partners around the world.

And it's with those ends in mind that undersecretary of defense for policy, Dr. Colin Kahl just recently stood up our new Dazdi (phonetic) ship for our taking global resilience issues to tackle the sorts of concerns that we're discussing today. That office is led by Deputy Assistant Secretary of Defense Iris Ferguson and myself. And we're quite keen to ensure that the department is postured to deal with the new challenges related to the Artic climate security ocean's policy, energy resilience and related matters.

To the question at hand, I think the department is taking really important steps here over the last year or so to ensure that climate considerations are incorporated in all of our strategic documents beginning, of course, with the National Defense Strategy that was recently transmitted to Congress.

This is a real recognition on behalf of the department of the ways in which climate change is fundamentally altering the strategic context in which the joint force operates. And we must, of course, adapt to those changing circumstances and adapt better and faster than our competitors. The NDS has a very strong climate focus particular as compared to prior NDSs and it's going to drive prioritization in resourcing at all levels as well as all levels of decision making to ensure the department is fully considering the impact of climate change on everything that we do.

I'll let Joe in a few minutes perhaps talk a little bit more about the ways in which the latest Department of Defense budget accounts for climate change and will help ensure that the joint force is postured to remain in ready, agile, legal, and resilient no matter the changing global circumstances.

I'll also note that the National Defense Strategy puts a real premium on climate literacy. I think we are quite cognizant of the fact that in the Department of Defense and the U.S. government at large, our people are our most valuable asset, and we need to invest in their understanding of these issues and the ways in which climate change intersects with their jobs no matter what their day-to-day responsibilities.

And so, working closely with colleagues in the Office of the Secretary of Defense for personnel and readiness as well on promoting climate literacy through our professional military education institutions and elsewhere.

In addition, to the work on the National Defense Strategy as, Suzanne, you mentioned. We have the DOD Climate Risk Analysis. This was a very important first step in considering the strategy implications of climate change for the department. We also have the DOD Climate Adaptation Plan which our colleagues in Acquisition Sustainment put out some time ago now and that's another critical tool for understanding the ways in which climate change is going to affect our ability to operate around the world.

And I'll just note briefly here given the focus of my office. You know, nowhere is this more true than in places like the Artic. There are a number of regions, really every region of the world is, of course, deeply affected by climate change, but the Artic is warming it on the order of three times the rate of the rest of the world and that's challenging the resilience of our installations up there.

So we're going to make important investments here moving forward to ensure that no matter thawing permafrost or other climate challenges in that region that we're postured to continue to operate as the joint force must.

I'd also note that finally that we're working very closely with our interagency

colleagues. And that's something that, of course, all of our strategic documents call for. We work day in and day out with our State Department and our U.S.A. colleagues who, of course, are the first port of call when it comes to natural disasters and humanitarian assistance challenges around the world. But we recognize that moving forward, the department is going to be called on more and more often to provide logistics and other support as these weather-driven disasters become all that much more regular in the headlines and beyond.

So that gives you hopefully some sense of the way we're moving out on these issues and using our strategic documents to drive action at all levels of the department.

MS. MALONEY: Thanks so much, Greg. Well, Joe, Greg I think really set you up to give us a little bit of understanding of how the department is incorporating climate considerations into budgeting. So let me start with that question to you.

MR. BRYAN: Well, thanks, Suzanne. And thanks again to Brookings for hosting us and having this conversation. And to my colleagues, I know it's always fun to do these things in person. I'm here with Greg, but unfortunately, we're all around the country, but maybe we've reduced our carbon footprint by doing this virtually so we can all at least be on message.

Just to build off of Greg's comments here. I think what's true fundamentally is that climate change is increasingly setting the context for everything that we do, right? It's not an externality to the department. It is fundamentally shaping the terrain. Fundamentally shaping capability and shaping our relationship with our operational areas and with our allies, adversaries, and competitors. And so, I think it's important that we acknowledge that and then look to what that means for the Department of Defense and why, in fact, these investments are so important.

When I think of climate change and the implications for the department, I think in terms of supply and demand, right? Climate change is doing two things. One, it's

driving demand for mission. So from humanitarian assistance and disaster relief to instability driven by mass migration to, you know, changes in the Artic which are requiring us to think about investments up there. It is driving mission for the Department of Defense.

At the same time, on the supply side, it's impacting our readiness and ability to actually meet that demand. So we saw shifts in the face of hurricanes. We don't train when it gets too hot. We evacuate our installations when they're hit by wildfires. And we've had too many of those occurrences in the past few years and we're looking toward a future where that could become increasingly commonplace.

So we have supply and demand lines that are going both in the wrong direction. And the space between those two lines represents risk for the department and risk to national security. And we really need to think about that and invest to reduce that risk. But I think going back to the context and the fact that this dynamic that we see evolving in climate has impacts not just for the Department of Defense and not just for the United States, right? It impacts our allies and our friends. And it also impacts our competitors and our adversaries.

And so, I think the real question for us is how do we respond to these challenges as a military? How do we respond to these challenges as a country? Because I think the countries, the alliances that are best able to manage the risk and best able to manage change will have an advantage because no one is exempt. No country, no nation, no alliance is exempt from the implications of what we know is a global phenomenon. So I think that's an important context to think about as we talk about our investments.

I think the fundamental principle at issue in our budget investments is one of alignment. And there is sometimes a perception that there's a competition between what happens to be good for the climate and what's good for the mission. And I think fundamentally that's wrong, right? We have to acknowledge first and foremost that we're in the midst of a global energy transformation at massive scale.

It is going to bring and is already delivering changes in markets, changes in

geopolitics which we see on TV every day and changes in military capability. And, you know, a good example is the auto industry. Globally, it's the decision has been made that that industry is going electric. What does that mean for the United States? What does that mean for our allies and partners? What does it mean to our foreign competitors like China who have taken a very aggressive steps to lead in that industry? And what does it mean for the military as we think about things like our tactical vehicles and electrification of other platforms?

So our investments are intended to align our defense capabilities with changes in the market that actually maybe good for the climate but that are also mission enhancing. And so, I'll just give two big examples that we can dig in as we get into the discussion.

Our installations we know are reliant on the commercial power grid for power, for example. We like most other customers in the country rely on public utility companies to sell us power. We also know that we're in a threat environment where the grid is at risk both from severe weather and from things like cyberattacks. And so, what do you do to respond to a risk environment like that?

Well, one thing is you get highly efficient. You take as much pressure off the grid as you possibly can. Second, you deploy things like distributed generation. Preferably distributed generation technologies that don't require logistic support like fuel. You just deploy them inside defense lines. So things like solar and batteries can be exceptionally valuable. And what you do is you put the controls in place to make sure that those assets are postured to support key missions in the event that you lose the grid. Now, that happens to be good for the climate but it's also great for the mission. Even if you don't care about the climate, you should be doing that anyway.

Similarly, on our operational assets. What we know is two thirds of our energy use at the Department of Defense is in operations and two thirds of that is in airplanes. And so, making those assets more efficient is a critical part of our addressing our

contribution to CO2 emissions. But at the same time, we know that making our platforms and our operations more efficient gives us combat capability.

It allows us to reduce the amount of logistic support that we have to deliver and what we expect to be contested environments. And some new technologies bring incredible capabilities like electrification, hybridization of tactical vehicles delivers capabilities like silent watch, lower logistics requirements, low heat signatures, lower audible signatures. I mean there's a whole set of combat capabilities that align themselves with that technology.

So as we approach the budget that's what we think about. Where can we -- and I know in the private sector we talk a lot about double bottom line -- where can we get mission benefit and climate benefit at the same time? Because I really think that it's important that that alignment occurs because our core mission at the Department of Defense is fighting and winning wars. And our fundamental belief is that we need to lead the kind of transformation that is happening globally because it will enhance not only our capability but also our standing and competitiveness in the world.

MS. MALONEY: Thanks so much, Joe. So, Samantha, I would like to bring you into the conversation. And I think Joe has just made a really great case for why clearly much of what we're doing in this space is driven by risk. But there are also big opportunities that we can take advantage of opportunities as Joe said serve the mission and also help with the budget.

So I wondered if you wanted to come in on that point?

MS. GROSS: Yes, I very much would like to come in on that point. I feel like we talk a lot about the risks of climate change with respect to the military and rightly so. I completely agree with that entire conversation.

But I feel like there's not enough emphasis on the ways that a greener fighter force can actually be advantaged, and Joe started to bring that up. But I'm thinking a lot about fuel costs and the supply lines that are needed to supply particularly fuels to the frontline. It seems like there's potential to have not just a more efficient fighting force but a

fighting force where fewer people are put in harm's way delivering fuel. Or you have fewer -- or you need fewer support staff because you need less fuel.

And so, I would love to just hear a little bit more about that. I know that defense has brought us many innovations. ARPA brought us the internet enabling us all to be here today. But are there ways in which the military can lead on some of these applications given that if you think about the cost of fuel and transportation and lives and everything else. There's such a strong advantage to having more efficient or electrified or, you know, a fighting force that uses less liquid fuels.

MR. BRYAN: Samantha, I can take a crack at that. I think, number one, you're right. I think that what we start with again if we start with our mission. What we know is we have in the department joint war fighting concept.

And that joint war fighting concept has four fundamental concepts. One of which is contested logistics meaning that we expect is exactly what you described. We expect that when we're in a conflict scenario that we are going to not be able to push into theater all the time everything we need, at the volumes we need it, when we need it.

And so, contested logistic environment means that, you know, we're going to have to get by with what we can get to ourselves. And the truth is that, you know, you can't sync efficiency, right? So whatever you can reduce from your demand, you can remove from their logistic supply. And we know that all the costs associated with logistic support that we saw play out in Iraq and Afghanistan, the cost in lives and in treasure both. We need to address that if we're going to be successful in what's in front of us.

You mentioned the internet. I think we're making some really interesting investments in the budget proposal that the -- the present budget proposal for fiscal year '23. We make a lot of investments in our existing legacy aircraft, for example, to improve their efficiency. Really simple fixes like winglets on airplanes and microvanes. Just small changes to existing airframes that are going to make them more efficient and reduce the amount of fuel that they need to do their job.

But we also make a couple of big bets. We have an investment in the budget in a new airframe type called blended wing body, which has the potential to significantly decrease the amount of fuel necessary to fly a big body aircraft.

So we need to both improve our current assets, which are, frankly, going to be in place for a long time and to think about what future capabilities can we invest in now that can maybe change the world? And I think that you really make an important point about the department's role. And I think it's not just a role that's driven by an interest in changing technology, but it's driven by demand to change technology given the conditions we're likely to face.

MR. POLLOCK: If you don't mind, I'll just briefly amplify. You know, I appreciate so much Samantha putting on the table here the fact that we collectively need to move past this false narrative that we can either be combat ready and capable or we can invest in operational efficiency.

Obviously, it's a yes and situation. We must do both and we're going to become more combat capable and ready by virtue of the sorts of investments that Joe is alluding to.

I should have mentioned in my prior remarks that both the DCRA and the DCAP are available publicly online as is the recent army climate strategy which speaks to exactly the sorts of issues that Samantha has raised here about the ways in which the army is going to adapt to changing circumstances to make themselves more capable as a fighting force not less. So it's time we moved past that false sense that there's tradeoffs between these two objectives.

MS. MALONEY: We have David Victor joining us all the way from Oslo. And so, David, thanks for staying up late for this conversation.

And I want to bring you back to risk because we've talked a lot about some of the risks of climate change to the military, but one of the other major issues, of course, is the impact of climate change on internal and intrastate conflict. And a publication by several

of our colleagues, coauthored by our President John Allen last year suggested that the changing climate patterns could drive up to a 60 percent increase in conflict in Sub-Sahara and Africa alone.

So what do you say is the balance of kind of risk here? Is it primarily in driving new conflicts? Is it primarily in the threat that it poses to U.S. military operations or is it a combination of the two?

MR. VICTOR: Yeah, I think it's a little bit of the combination of two. I think it's mostly actually overseas in other countries.

Quite often when people think about climate risk and various ways of climate change affects, you know, threats. We think of them in terms of transition risks. So what we've been talking about a lot so far. The transition from a high carbon world to a low carbon world. One of the ways you help that along is with efficiency. And the case for efficiency is very strong as we've just been discussing this.

This is an area where the incentive structure in the Pentagon overlaps very heavily with its infrastructure and private industry. Boeing and Airbus and others are working on improving aircraft and so on. We're all going in the same direction.

The other kind of risk which I think is the sleeper issue is what's called physical risk, is the physical impacts of climate change in the various ways that those create risks and then, you know, you have to manage those risks. So that the national defense strategy, the '22 version is the classified version. I haven't read it, but there's a factsheet out, a very helpful factsheet on the Pentagon website that lays out -- and it explicitly calls out the climate change issues and the physical impacts climate change in the way that they affect the force of this.

And I think there's a bit of an impact there. You know, there's been a concern for many years about, you know, rising sea levels and their impact on Norfolk and other kinds of bases. There's been a concern I think as Joe mentioned about an extreme weather environment for just training, let alone operations. When it's extremely hot people

actually die because they cannot exhaust enough heat from their bodies through sweating. And so, there's a lot of risks there.

I think one of the things that is really striking about a modern military though is a modern military is already a hardened asset. And so, there are already lots of ways that one prepares for these kinds of effects, and you harden the assets. So it's not that those problem are irrelevant. They're relevant, but, you know, how are the institutions looking at them and preparing for them and adjusting?

The impact in other countries is really, really different. And so, the report that John Allen and others were involved with that Suzanne you mentioned points to, I think, the key issue here which is the best social science in this area says that in a world of changing climate we're going to have more threats including migration, and that's kind of a salient example, that are going to arise. And they're going to arise because the impacts of climate change in Iraq with the fragility of states.

And so, states that are strong and highly capable when something like that hits them, they have institutions like FEMA and other institutions that help them adjust and manage. States that aren't they solve the problem from state failure and through people having the perception that state is failing. And so, they often in some extreme cases, they actually leave.

And so, I think that's the big issue that we have to pay attention to. And I think one of the reasons, many reasons it's uncomfortable is because some of the remedies are not kind of class, hard force remedies. They're remedies involving a state building and the things that often get a bad name. But they're essential if you're going to improve the capacity of other states -- of other countries to deal with these kinds of threats and therefore reduce the dangers of the (inaudible) that flowed to a lots of places including the United States.

MS. MALONEY: Greg or Joe, do you want to take crack at responding to any of the points that David just raises?

MR. POLLOCK: Sure, absolutely. You know, I think David hit the nail on the head really. And that is that the risks are not singular. When we think about climate change and it's not on effects, we're really talking about cascading risk and the risk that climate impacts, for example, crop yields which effects a society's ability to feed itself or to have access to sufficient drinking water.

And much of the developing water, these were challenges even before climate change made these risks all that much more acute. But ultimately, these challenges for societies bear on the confidence or lack thereof in local governance at both the local level and at the sort of country level.

And we've seen in various cases whether it's been conflict or climate driven even small upticks of migratory flows can have really destabilizing effects and additional complications for politics in places like Europe which has really, I think, had to adapt to additional migratory pressures from the south and now more and more from the east.

So the challenge I think for all of us is how do we model these threats when they're not -- you can't just simply draw a simple line across time. You'd have to think about the ways in which these risks stack on top of each other and can result in quite combustible situations when a climate event or a governance challenge sort of results in a tipping point in a given society.

One of the ways that we in the department are trying to think through those challenges is through the use of scenario planning and wargames, which I think are some of the best tools we have to think through the ways in which these challenges will manifest themselves in the future. And frankly, the way that they're already manifesting themselves in a number of parts of the world today.

So we're working very closely with our colleagues at U.S. SOUTHCOM and at the U.S. Indo-Pacific command to think through these challenges. Likewise at U.S. AFRICOM which has been quite forward leaning in thinking about the risks that climate is going to pose to an already very demanding security environment in Central East, West

Africa, North Africa and beyond.

So I think David has got it quite right and we're very much grappling with these issues inside the department as well.

MR. VICTOR: Yeah, and I just want to comment on a couple of points that Greg pointed us to on the modeling and the threat assessment because this is a -- as a social scientist, this is a nightmare because the causation is complex. And always kind of partially and imprecisely determined.

About two, three years ago, there was a lovely paper in nature that asked the question, what's the relationship between climate change and the risk of civil war? And therefore, with civil war more migration and so on. And so, they asked some climate change experts, sure, that's great. But they really asked civil war experts who didn't really know much about climate change but knew a lot about civil war, about the factors that raise the probability of civil war, to make various assessments.

And when they're faced with a world where there's a lot of climate change at best, they can assign different probabilities to certain kinds of partially causal conditions that then interact in various ways that are essentially unknowable about their ultimately impact on civil war. And so, you're kind of shifting the median tendencies. And I think that makes it very hard for the analyst community to give, you know, precise predictions.

I think it may actually make scenario planning and some of the other tools that we're comfortable with may become harder to use because scenario planning is helpful when you can kind of identify kind of discrete various options. But harder to work with when all the options overlap and you're really in a world of lots of probability distributions as opposed to individual discrete, you know, alternative views of the future.

MR. BRYAN: I think, David, really good points on that. I think that one of the things that you'll see, frankly, in the budget is the recognition that we need to understand this better and need to model it better and model potential outcomes.

And so, there's actually funding both in the '22 budget, but then looking

forward in ’23 and beyond as to how do we -- funding for modeling simulation and wargaming within the department itself so we can better understand some of the risks that are out there. And then some of what those risks might mean for things like force planning and other things that we have to consider.

So I think you're right. There’s a lot that is unknowable, but we're also seeing a bunch of the risks manifest themselves as you know and around the world already. I mean Central American migration in the face of drought and extreme weather ends up at our southern borders sometimes. And that is something that we have to grapple with ourselves. Setting aside some of the massive migration we're seeing having effected Europe.

You know, there’s the Secretary Austin last year. Last, in fact, last Earth Day shared a panel for the president had a Global Leaders Climate Summit and the secretary chaired a panel. And that panel was -- there were several ministers of defense from around the world on that panel talking about their perspectives with respect to climate and its impacts on hard security.

And I was struck by the minister of defense from Iraq who actually talked about drought in his country and how it is an exceptional risk not just because people are thirsty but because it drives people into the arms of the enemy. And everyone understands that. So one of the terrorist’s targets is, of course, water resources including the Mosul Dam.

And so, again, when we talk about climate being the context for what we do. It’s the context for everything. And so, it shifts relationships. It creates opportunities for folks who are not aligned with our interests, but it also potentially creates opportunities for us to lead in ways of a world that can better reflect our interests.

MS. MALONEY: I want to try to bring maybe all of you out on the tensions between short-term and long-term interests and demands. And obviously, we are here today talking about an issue that effects the globe. That is going to be with us for all of our

lives and well beyond that and will really reshape our world.

And I think it's obviously very allottable that we see the commitment from the department to think proactively about these issues. But we're also looking -- we're also in the midst of a very urgent crisis that only reinforces how large the fossil fuel dependency looms for our economy and for our geopolitical security.

So how do we manage the tradeoff between a focus right now, you know, on trying to ensure that there's gas to Europe. That we have, in fact, a way to manage rising oil prices around the world and the implications for the global economy even if we're trying to kind of lean into this kind of lean into this transition in the way that we think about threat? In the way that we think about risk? In the way that we think about opportunity for strengthening American security around the world?

I'm going to start with Samantha on this question, but I think it's one that I know all of you have something to say about.

MS. GROSS: No. I'm happy to get started. And I definitely have heard a very cynical point of view that, you know, the world order is changing. That the post-Cold War era may have ended, and you're worried about climate change?

But on the other hand, I think we need to flip that idea and think about what today's events mean for the threat environment and the probabilities of various events that we have been talking about previously that's tied into the rest of the conversation.

The military has, no question, been really important to securing supply of oil for decades. Now, it's probably involved in the natural gas trade as well as more natural gas is traded over the water. But this is bound to change over time as the world moves away from fossil fuels, as our energy systems change, as the mineral products that are important to our economy shift somewhat.

And so, we were going to see changes anyway and inevitably. But I think the question we need to ask ourselves about what's happening today is how does this event change the pace and the geography of changes that we were expecting to see anyway?

And just as an example, given how dependent Russia is on fossil fuels in its economy. Russia was going to face challenges during the energy transition.

What has happened because of the invasion of Ukraine, in my opinion, is that those challenges have been made more acute and have moved forward in time. What does that mean geo-strategically? And how does the military approach that? How does this event change our relationship with oil producing allies in the Gulf, for instance? Will they be in business longer than we expect? That our political systems going to be different if the world is preferentially denying Russian supply?

And so, I think this is another thing where, of course, you add climate to it. It's incredibly important what's happening. But it' changes the shape and the timing of events that I think we saw coming anyway.

MR. VICTOR: Yeah, maybe I can jump in here because that's exactly right. I guess I want to say two things about this.

First, there's a whole lot of Americans who are right now saying to the Europeans, you know, "I told you so." We've been worried about those big gas pipelines that went in ever since the '80s. And the European thesis was always, we depend on the Russians for gas, but they depend on us for revenues and that makes it stable.

And yes, that was stable, and that was precisely the problem that they ended up and then funding Russian bad behavior. A bit by gas, more with oil. So I think actually the "I told you so" stuff is not so helpful. But the solution to the problem is to radically reduce the Western dependence on Russian oil and gas which means to reduce dependence on oil and gas because it's becoming essentially impossible especially with oil which is refundable. Essentially impossible to figure out which flag is on the oil and say, I'm only going to take this flag and not that flag.

But that's already beginning. A lot of Russian cargos depending on how many you count. There's maybe a million or two million barrels a day that's not on the global market because it's just hard to do business in Russia and that number is growing. So the

first thing I'd say.

The second thing is I would just from a -- I want to take a European perspective here. The Europeans are highly motivated to fix this problem. And it's not just motivation because of the dependence on Russia and because of the funding of the Russians. Although, that's sure does add a lot. It's because of the way that dependence issue has resonated with climate change.

I mean so I'm here in Oslo at the energy conference. Last week, the Norwegian government announced 30 gigawatts of offshore wind by the year 2040 and they're going to advance that target. Thirty gigawatts are more than the entire peak demand of Norway. It's about the size of the entire Norwegian hydro system.

Last night, the German, Danish, Dutch governments along with Ursula von der Leyen laid out a plan or signed a plan for, I believe, 65 gigawatts of offshore wind to go in over the course of the next decade or so into the European grid.

So wind is not going to eliminate their dependence on gas but it's going to radically reduce it. And then they're going to be able to use their own gas for other things and more L&G. And so, what you see is the picture that's now emerging which is not cheap but is highly motivated to reduce dependence on oil and gas. And along the way also accelerate their mission, the climate calls.

I think the reason we have to pay attention to this is because all the things that they're doing, that are happening like here in Norway are then affecting the global technological frontier in ways that are going to then probably advantage the United States. Maybe not advantage U.S. firms, but advantage the United States.

A lot of the wind that's going in its offshore wind, the Europeans are just by far the world leader in offshore wind, floating offshore wind in particular. That technology is going to be available including for California where any wind we do is offshore is going to have to be floating. Electrolyzers for hydrogen. So Allegra (phonetic) and I had a piece in the New York Times a few weeks a lot about hydrogen.

The electrolyzer technology is posed to rapidly accelerate and that's going to make it possible to use hydrogen as an energy carrier and basically replace at least some natural gas with hydrogen. Maybe a lot over time. So the picture is really changing very quickly. And the places that are at the frontier of all this or the places where private investors have been able to line up with credible government policies.

And that's what you got in Europe. And I think one of the problems we have in the United States is we haven't at the federal level, at least, been able to send a reliable long-term signal to private investors around the need to radically decarbonize and therefore to really, you know, disrupt the old businesses. Get on with the energy transition and line up around the new businesses.

MR. BRYAN: I think, you know, that's a great, really interesting answer, David.

You know, one place where this manifests this discussion about short-term versus long-term manifests itself for the Department of Defense is around electrification and in particular battery technology, right? You know, we're obviously moving very rapidly towards an electrification of everything on four wheels. Every auto company in the world has made serious commitments. GM has put $35 billion. I mean there's major, major movement here.

At the same time, the department, like most consumers increasingly relies on lithium-ion batteries, the same technology, to power a lot of our capabilities. Anything from handheld radios to 16 batteries that go in a tactical vehicle to advanced capabilities like lasers and directed energy weapons.

Now, the United States isn't particularly competitive right now in a lot of places in the supply chain for that battery technology, right? That's changing, but right now we are at a disadvantage. We're putting in a lot obviously a battery manufacturing but upstream in the supply chain from mineral processing to cathode anode manufacturing. We don't have capability here in the United States right now to service the Department of

Defense's needs let alone the broader auto market.

And I think the administration has done a great job at recognizing that and understanding that the United States really needs to step up and to become a world leader in this space. Right now, China is the dominant player in the battery supply chain. And why that matters to the Department of Defense is, is that our supply chain runs straight from our capabilities to Asia. And that's not as we saw in COVID with the challenges of supply chains that is not a great place to be.

But the department, we are a big customer, but we're not big enough to change the market on our own. So the United States needs a competitive electric vehicle industry. And a demand signal within this country for that industry in order for the Department of Defense to mitigate some of our risk.

So it is this question of what's the long-term commitment to change? And to a transformation which we -- I think we on this call, we on this event know is inevitable. But I'm not sure we have the consensus all the time necessary to make kind of policy decisions that are going to get us to the right place. Like I said, I think the administration have done a really fabulous job of leaning on this. And the president has made it very clear, but we've got a lot of work to do.

MS. MALONEY: And maybe to all of you, how do you build that consensus? I mean clearly this administration is making a really big commitment. But the Pentagon has a really important role to play.

You talked about climate literacy for the troops. Is there a wider role in sort of leading on this issue so that we can sustain these kinds of policies and initiatives beyond the lifespan of any individual administration or secretary of defense?

MR. BRYAN: Well, I'll just want to -- but I'll hand it to Greg but let me just say this. I think, one, is we've aligned our initiatives with our mission because we think it brings capability. And so, within our own institution that's our job is to deliver capability on behalf of the American people to fight and win wars, right?

So we need to align what we're doing with that. And we believe that the energy transition offers us that opportunity, so we believe that we're aligned. At the same time, the United States -- the world is changing. And the United States must be competitive in these spaces and in these industries and in these markets.

And the message has to be that this is where we're all going. We all know it and we need to be competitive because we are -- we can't hold onto the past if we want to be part of the future so.

MR. POLLOCK: Yeah, I'll just build a little bit on what Joe and David have said. I mean to your immediate question, Suzanne. I mean threats and risks are agnostic to politics or to partisanship.

And so, you know, here at the department, you know, we're focused on what those threats are to our mission and in posturing ourselves accordingly. And I have every belief that that will continue, you know, from administration to administration moving forward.

I'll just say that in my personal view, and I think this is an emerging consensus both in Europe and beyond. And I think more and more here in the United States that the current crisis in Europe hasn't suggested a reason for delay in the decarbonization pathway. If anything, it's given real cause to accelerate our progress in that connection.

That said, you know, the world is going to continue relying on oil and gas for some meaningful degree -- to some meaningful degree for some time. And that's in some degree inevitable even as solar and wind continue to scale up. And I think countries like Russia and a number of Gulf states see potential sort of near to medium terms advantage in that.

And those low-cost producers will be well positioned even, you know, into the medium term. But that said, you know, this transition is going to happen and that puts, I think, countries like Russia and others who are still wholly reliant on hydrocarbon exports to

support their economies in a very precarious position.

You know, countries like Russia are, I think still seeing, you know, wildfires in Siberia notwithstanding. Seeing climate change more as an opportunity than as a risk, but I think that's very much going to change over time. And it's really who adapts to this changing environment best that's going to win the kind of strategic competition that Joe has been alluding to here.

But we really need to get ourselves organized to think about what are the commodities of real significance? Of real relevance for the future? And, you know, we already have a sense of what those are and where those are. And we need to work very closely with our allies and partners in Europe and beyond in making sure that we have a strategy to position ourselves well for that competition. I know our adversaries are doing that and we probably have some room to improve still in that regard.

MR. VICTOR: You know, I think first of all, the point about low cost is exactly right. The International Energy Agency did this interesting exercise last year where they said, who wins in the world where total oil demand goes down because we're concerned about decarbonization. You have kind of an 80 percent reduction of oil demand. And what happens is the OPEC share doubles because OPEC producer's general rule is whatever cost them then the rest of us. And so, overall, it's good for us to consume less oil but, you know, we have to be a little careful about the larger implications.

I think this point that Joe started with about sticking to mission is crucial to make this durable. And here's two examples where I think this tension is going to play out. Take this issue of our dependence on lithium and now people want that cobalt. And, you know, kind of move around the entire periodic table of the elements. People are worried.

There's a lot of pressure now to onshore. I'm very worried that a lot of the onshoring discussions actually are going to make supply chains more fragile and we ought to be instead of investing in something that is, frankly, start to treat lithium a little bit like the way we treat oil right now as a critical commodity. And so, we have a diversity in supplies.

We have more stockpiles and safety valves and so on.

Actually, more globalization rather than less globalization. I think if we get that right that's an example of something that is durable. Put that in contrast with another thing that people often ask the Department of Defense to do which is to be the first buyer for some new technology. A couple of demonstrations ago, DOD was asked to sign up to buy a whole bunch of Sinojit. And I think at $20 a gallon or whatever we spent for Sinojit that it was a disaster financially.

Some similar arguments are going to be made now about sustainable aviation fuels which is cheaper than $20 a gallon but it's, you know, not as cheap as Jet A. People are going to wonder what's going on in our refinery markets right now. Jet A is getting more expensive.

And those are areas where I happen to favor government playing a role in buying down. You know, providing guarantees for purchases of new offtake. I think that's a good role for government, but I'm not sure that that's widely shared in a bipartisan sense.

And so, that maybe an area where it's harder to build a more durable policy because the moment another administration comes in then there's a different set of political views. That policy is toast. Whereas the policy that actually assures more security around lithium and other critical materials maybe that's going to be more durable.

MS. GROSS: I would love to follow up on some of David's comments. And that is this question about education. You talked about having an education component to ordinary people in the military to understand how these plays into their personal mission and into the wider mission of the military.

And I'm wondering how much that education component can be extended to others in the government? Perhaps the appropriation committees. I saw some notes from the appropriation committee hearing in the House on the new military budget. And was just frustrated as all get up at some of the questions that were asked about climate.

Is there a way to help folks to understand that these are things that have to

happen because of the changing world? The investments are not actually reducing the military's own footprint can be advantageous not deleterious to their effectiveness as a fighting force. And what can the military do basically to ensure that this doesn't all change with the next administration, with a different letter in front of it comes in?

MR. BRYAN: I think it's a good question. I mean I spent a lot of my career on the Hill. You know, quite honestly, I think that conversations with bipartisan conversations with our friends on Capitol Hill are typically productive in this space if we stick to the mission.

I think it's a critical message that they need to hear in order to be comfortable with where we're headed with our budget. So I think that that's really an important part of the way in which we need to communicate to make this durable and sustainable.

The other thing is, you know, one of the things we have the advantage of doing here is setting policy and giving direction to a large institution like the Department of Defense. You know, it takes a long time to turn this ship, but when it's headed in a direction, it takes a long time to turn it back.

And I think that one of the things that we've done, for example, is to -- the deputy secretary of defense, Secretary Hicks, issued a memo recently that directs the department and all of our acquisition functions to prioritize energy demand reduction in all future systems and all major upgrades to existing platforms. And so, what that does is it begins to orient our acquisition workforce to say, we need to look at what we're buying and what we're fixing with a priority eye towards reducing the amount of energy that that system demands.

Now, that came out of a lot of work we did over a series of months, and it's grounded in the mission that we started with and the idea that the joint warfighting concept assumes that we're going to have contested logistics. And so as a force, as a department to do our job, we need to make sure that we're aligned with that understanding of contested

logistics in reducing the amount of logistics that we require in the first place.

And I think that argument, not only does it have a staying power in here in the building, but it also has currency with our oversight and appropriation committees. Because I mean it has the distinct advantage of being true. And so, it is an argument we like to make because it doesn't get us out over our skis. It's completely in line with what we ought to be doing regardless of whether you care about the climate. I mean we like that advantage, but we should be doing this anyway.

And, David, we'll have to take it offline on the advanced biofuels argument. I think we've got quite a more competitive price. I think the problem right now is that we don't have the fighting capacity in the United States to deliver that kind of fuel or globally. To deliver the kind of jet that we might need, but that's a whole side conversation.

MS. MALONEY: I don't want to disrupt that debate, but I do want to start to bring in some of the questions that we're getting from audience.

Let me pair a couple together because they do look at old energy a little bit. We have one question from Derick Law (phonetic), I think if I'm pronouncing that correctly on Twitter. Asking about what role the price of oil -- I presume also the supply of oil -- plays in the national defense strategy?

We have another question from Ryan Harris at the Pacific Disaster Center who's asking specifically about countries whose economies are heavily reliant on fossil fuels including Saudi Arabia, Russia, Venezuela, countries like this. You know, what are the risks as we enter this transition phase? Will we see -- I'm beginning to expand on Ryan's question, but will we see more risk tolerant behavior from countries that recognize the declining future value of this resource?

MR. POLLOCK: Okay. Well, I'll start maybe with the second question. We work closely with the Pacific Disaster Center and really appreciate the question coming from them.

I do think that, you know, we are going to see a sort of waking up in a

number of autocratic kind of hydrocarbon dependent states over time of the risks that they're courting. It's going to become harder and harder to sustain a certain quality of life in a number of these places over the medium term. That said, you know, as David alluded. You know, there's going to be potential a little bit of a boom time between here and there as those -- not necessarily in Venezuela but particularly in places like the Gulf, you know, where they are the most sort of price competitive around the world.

But I think they're going to be facing real kind of risk to their stability. And that means challenges for those regimes. But it also in many cases means challenges for the United States because in many -- we have lots of history to demonstrate that these sort of sources of instability don't stay contained within a single country's borders. And have a way of spilling over and causing instability in neighboring regions or contagion of various sorts.

So it is certainly something we have to be mindful of. And I'll let Joe tackle the question about the price of oil.

MR. BRYAN: Well, you know, I'll only say this. When the price of oil goes up, we pay more for oil, and we use a lot of it. And you don't always have it budgeted for. So it is, you know, it has a real impact on the department. It has a real impact on the American people because we're the beneficiary of the funds that were appropriated by the Congress. So it's a challenging environment when prices go up for the department, right?

Which makes another really strong argument for efficiency and for things like distributed generation and renewables that don't require fuel though. You know, we have to always consider their applicability on platforms and things, but I mean the truth is that, you know, when the price of oil goes up, we pay more.

MR. POLLOCK: It goes without saying, of course, that the major producers have always looked to bring down those prices because they know that when those prices go up past a certain point that's exactly when we see real meaningful investments in renewable energy.

So in some sense while it's a real source of strain and stress not only for the military but for American households in the near term, it can actually have a positive effect over the medium to long term.

MR. VICTOR: And we should put our moderator on the spot talking about whether high prices and the prospect of low prices effect Iranian behavior because we have with us the world leading expert on that question.

I will just say one thing about the effective price on reform in the energy dependent exporting countries, which is when the prices are low, they hire McKenzie and everybody else. And they layout lots of reform strategies. And when prices are high somehow those reforms strategies get forgotten. And that is not unique to countries.

That is probably true in every steakhouse in Houston right now is probably ordering more expensive bottles of wine. Ready to serve everybody who thinks they're the master of the universe because they're making more money just because the price of oil went up and their company is making, you know, boat loads of cash. But this is one of the problems with creating very long-term incentives for reform. That's why I think the European response has been so just staggeringly interesting.

MS. MALONEY: Let me bring in another question from the audience. We have a question that I think is probably tailor made for you, Greg. But I'm sure there's going to be opinions from across the panel here.

And just really asking a very wide-open question about what's the DOD view on responding to the melting Artic and security of the Northwest passage in particular?

MR. POLLOCK: Yeah. Needless to say, we're very much seized with what a changing Artic will mean for the international security environment. You know, there's eight Artic nations. The United States is obviously one of them and a number of allies and partners here in North America and in Europe.

And, you know, we are increasingly seized with what it's going to mean for additional access in the Artic. You know, obviously our competitors are also interested in

what that will mean for them both economically and in terms of transit routes and the like. So we need to be postured to continue to ensure that the Alaskan Artic in particular remains, you know, an important platform for defending northern approaches to the continental United States. It's an important aspect of our homeland defense strategy.

You know, we have good dialogue and the Artic has been long been a peaceful region and we want to do everything we can to keep it that way. But that said, you know, we have to be quite vigilant about monitoring the ways in which our competitors are behaving in that region. And be mindful of what their interests are and be prepared to respond accordingly.

So it's an important consideration in our overall national security and national defense strategy and it's, frankly, getting more focus certainly than it has historically given the fact that it is becoming more accessible more of the time.

MS. MALONEY: David, do you want to weigh in with a perspective from Oslo?

MR. VICTOR: I think that's right. I think the scramble for the sources in the Artic is overdetermined. That the Artic is melting makes some things more accessible. But through technological change there were also a lot of reasons that the Artic will be accessible including because of the natural gas resources.

And so, I think we maybe have accelerated the inevitable and we've also accelerated the arrival of the Chinese interest in the Artic.

MS. MALONEY: Let me put forward a question from Cameron Richardson who's from the Clearing House for Military Family Readiness. Cameron asks whether the physical risks of migration and the associated conflicts resulting from climate change might be incentivizing the DOD to think about carbon capture technology as a means of reversing climate effect? That wouldn't ordinarily I think be in the DOD's bailiwick, but I'm interested to hear your view on that technology and the applicability.

MR. BRYAN: So the question has come up again. I think -- look, the

Department of Defense is the largest energy user in the government and we're among the largest energy users in the world. Associated with that energy use comes greenhouse gas emissions and we have a responsibility to take steps to mitigate our contribution to the problem.

I think carbon capture is obviously a developing capability. It's interesting to us. I think one of the places where we see potential alignment again with our mission is, for example, around encroachment issues. We enter into agreements through a program called Revi (phonetic) with local communities, states, and nonprofit organizations to acquire and protect land that might have bought installation.

It might protect our ability to conduct training and to do what we need to do in the areas on our installations but also around our installations. So create a buffer zone. And in those places, we may have the opportunity to think about how do we best use that asset that we have helped contribute to the preservation of to act as a carbon sync for some of our own activities. I think that's one place where we've given it some thought.

MS. GROSS: Great. Just add a quick point here. It's true that the military is a very large user of fossil fuels and producers of greenhouse gases. However, if you're working on your policies to stick to the mission. It's difficult to make the argument that carbon capture and storage is part of the mission.

And so, on the one hand, is a large emitter that you could see that being a good idea. But on the other hand, if what you're trying to do is a durable, credible with both parties' climate strategy. It seems that selling carbon capture and storage as part of that could be quite difficult.

MR. BRYAN: It is more challenging.

MS. GROSS: Yeah. That's my outside the military opinion.

MR. POLLOCK: With that said again go back to this idea that, you know, we are a significant holder of land. Land has the potential to act to our benefit in preservation to our core mission. It also has the potential to act as a sequester mechanism

for CO2. So I think there are ways for us to think through this problem in a way that allows us to both conduct our mission and be a positive force for change with respect to climate.

MS. MALONEY: Well, we had hit the top of the hour and gone even a few minutes over. So I want to put one question finally to the entire panel that I'd ask you to try to address in a kind of blue-sky way.

And for our panelists from the Department of Defense, if you could close us out by talking about what are the most important steps that the department is taking in your view in terms of making a difference for the long term for the climate transition?

And to Samantha and David, what are the most important steps that we're not yet taking that we really ought to be taking to put this issue front and center and ensure that we're both taking advantage of the opportunity and mitigating the risks that are posed to national security as a result of climate change?

So perhaps first to the Pentagon and then to Samantha and David.

MR. POLLOCK: I'll lead off with a few brief remarks and then hand it to Joe to talk about a number of the important steps the department is taking internally to grapple with climate change.

I'll say that, you know, I think just overall. The fact that DOD is getting in the game here has really important symbolic power. And it's a kind of acknowledgement of the degree to which climate policy is national security policy nowadays. I think that's a sea change in some respects, and I think it's important.

I mentioned a few times the work we're doing on climate literacy. I think there's an overall transition happening in our society in terms of the appreciation of the national security dimensions of the climate challenge. And we're going to only see that I think take shape more and more, you know, as currently junior officers become more senior officers. And senior officers become general officers and flag officers.

And the work we're doing I think on the climate literacy side will help ensure that those future strategical leaders are really postured to continue navigating what's bound

to be an ever more stressful international security environment.

I also will note that, you know, DOD is an important mechanism for engaging with allies and partners around the world. And our dialogue with them is, I think, really helping those societies or the military first and foremost. But those societies more broadly think about how they plan for and will need to adapt to the risks and threats associated with climate change. And that's, I think, continuing to expand what are already some very close and important relationships for the Department of Defense and the United States more broadly.

So that's a few things on the sort of strategic, international facing side and I'll let Joe speak to some of the other measures.

MR. BRYAN: Well, thanks for that question. It's an interesting. You know, I'm tempted. I love some of our investments. I really -- I like the technology and I'm tempted to say, you know, the transformative air platform or the transformative tactical vehicle that we're going to put in the field.

But I think that would probably be a mistake because I think I'm going to go with Greg. And I think the idea that the Department of Defense, the secretary of defense, deputy secretary of defense, the president are out front in saying, climate change is real. And it impacts our security as a country. It impacts our interests abroad and at home.

And it impacts -- and should impact the decisions we make about how we interact with allies, partners, adversaries, competitors. And the choices we make as to what we're going to invest in and what we're going to be as a country in the future. I think in the middle of what is often a polarized debate, I think the Department of Defense and our leaders making those statements which are based on a set of facts and science and risks that are real, articulated, and grounded is probably our most important contribution to this discussion.

Because we can fix a lot of stuff, but what we really need to fix is the debate which has become unnecessarily polarized around a risk that we -- a true risk that we face.

MS. GROSS: Joe has really described the flipside of what I wanted to say here at the end. Like I'm very excited to hear some of the things that have happened, how serious the military is taking this.

My bit of frustration with this issue and things that I can see -- I hope to see improve in society, not just necessarily in the military is the fact that we have to talk about this as if it's a thing. That it's not completely given, and this is where we're all beginning.

I definitely heard some frustrating things out of Congress about the new defense budget and I think it's crazy. The military is meant to deal with low probability but very high consequence risks. And this isn't a low probability risk. This is a high probability risk with really important consequences.

And so, the fact that it even needs to be said or is in any way controversial that the military should take these things on both in its own readiness to become a better equipped fighting force and in the change of the geopolitical environment. It's a no brainer. And I'm glad to see the Pentagon thinking that way and I hope that it continues through time and becomes more common in Washington and in general and in Congress.

MR. VICTOR: Yes. So I think these are all various astute comments. I want to say two things that I think we're not doing well enough on right now.

First is we're not doing a good job especially the federal level of sending reliable signals to business to control emissions. The world is awash in capital looking for return. And almost everything is interesting in terms of emission controls and capital intensive.

And so, firms they have an idea of what to do, but the risks are very high if you think the policy environment is going to be shifting and so on. And I think that matters when we're having these security conversations because ultimately the way we're going to lower the risks related to climate change is we're going to reduce the amount of climate change and that's going to require ultimately emissions control. And, you know, maybe carbon removal. But it takes an awful lot of time and a boat load of money to really scale a

carbon removal. So it's really an emissions control problem.

The second thing I think we're not doing well enough with is climate risk assessment in the intelligence community and the defense community. You know, we're making some progress here and there, but the political winds blow so many different directions in Washington that I think it's hard to really sustain that effort and put it front and center and have administrations of all different types not see this stuff as kind of laughable and not serious.

And that's a real problem because the only way we're going to get the methods right and really understand tailored risks and how climate interacts with other things like fragility of states is with a sustained effort and assessment and response. And I think that's going to be very important not only because these are real risks and we're going to need to deal with them but also because maybe if we do a better job of articulating how climate effects national security in the hard sense then we can bring a little more of the American public along with us.

And that's a hypothesis, but I actually don't have an amount of evidence. It seems right. A lot of people believe it. It's probably true. The evidence we have for it is not robust, but it's a solid enough hypothesis that we ought to really make an effort on that front. And we can't do that until we really articulate in the language of the intelligence community or the defense community how climate actually affects what you do as core mission.

MS. MALONEY: Thanks to you, David and Samantha, for those comments. Thank you so much to Greg Pollock and Joe Bryan for being here with us today.

I think this has been a really exciting conversation. The fact that climate and the energy transition are being integrated into every aspect of the DOD enterprise is really just a microcosm of what we need to do as a society around these issues. It's got to be front and center in everything that we do in all of our considerations. And so, conversations like this are important. And I'm glad that we've been able to start here.

We were unable, of course, to have Assistant Secretary Dalton and on our

side, Brookings President John Allen was also called away. So I think that just gives us an excuse to come back together. I hope that we can continue this conversation, continue to talk about the technology, the risks, and the opportunities. And really very grateful to all those experts here on the panel and to all those of you who been watching and listening and following on Twitter.

Thanks so much and we look forward to another conversation soon.

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