# INTERNATIONAL CLIMATE CHALLENGES AND OPPORTUNITIES

## HEARING

BEFORE THE

## SELECT COMMITTEE ON THE CLIMATE CRISIS HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

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ONE HUNDRED SEVENTEENTH CONGRESS

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# INTERNATIONAL CLIMATE CHALLENGES AND OPPORTUNITIES

**THURSDAY, OCTOBER 28, 2021**

HOUSE OF REPRESENTATIVES,
SELECT COMMITTEE ON THE CLIMATE CRISIS,
*Washington, DC.*

The committee met, pursuant to call, at 10:35 a.m., in Room 210, Cannon House Office Building, Hon. Kathy Castor [chairwoman of the committee] presiding.

Present: Representatives Castor, Bonamici, Brownley, Casten, Graves, Palmer, Carter, Miller, Crenshaw, and Gonzalez.

Ms. CASTOR. The committee will come to order.

Without objection, the chair is authorized to declare a recess of the committee at any time.

As a reminder, members participating in a hearing remotely should be visible on camera throughout the hearing. As with in-person meetings, members are responsible for controlling their own microphones. Members can be muted by staff only to avoid inadvertent background noise.

And I would like to remind members that, per the guidance of the Attending Physician, members, staff, and all members physically present, including in this hearing room, are required to wear masks unless seeking or under recognition by the chair.

In addition, statements, documents, or motions must be submitted to the electronic repository, sccc.repository@mail.house.gov.

Finally, members and witnesses experiencing technical problems should inform committee staff immediately.

Well, good morning, everyone. Thank you for joining this hybrid hearing on the international climate challenges and opportunities.

Today, we will hear about the challenges and opportunities for international climate action as we prepare for the COP, the Conference of Parties 26, about to commence in Glasgow, Scotland.

And I will now recognize myself for a 5-minute opening statement.

First of all, thank you, everyone, for joining us today. We are at a very exciting inflection point for our country and for the planet. We now know that we are on the cusp of the most historic investment in clean energy and climate action that has ever been part of U.S. politics. Our economy is going to move forward through creating jobs, providing opportunities, but also addressing the very costly impacts of the climate crisis.

It appears now that we are poised to vote on a Build Back Better plan that will help us combat climate change for all American families. And just as a summary, President Biden just left a meeting

of the Democratic Caucus where he outlined a lot of what is in that framework.

What we know now is that that framework will cut greenhouse gas pollution by well over 1 gigaton by 2030, reduce consumer energy costs, give our kids cleaner air and water, create hundreds of thousands of high-quality jobs, and advance environmental justice by investing in a 21st century clean energy economy. From buildings to transportation, to industry, to electricity, and agriculture—agricultural smart practices all across this country, it will help restore America's leadership role in the world.

But we have a lot to do heading into Glasgow. Climate change is a global crisis. According to a recent study, the climate crisis impacts more than 85 percent of the world's population. And although every country is impacted differently, it is clear we have got to work together to solve it.

We have to choose a path forward. One path is paved with inadequate action, which will lead to continued destruction as we kick the can down the road. But we are not going to do that. There is a brighter path, and it is paved with generational investments in renewable energy, electric vehicles, environmental justice, and climate resilience, and it leads us to a net-zero-emissions world, one in which future generations will thrive.

We have a moral obligation to our kids and future generations to do this now, and the United States has a special responsibility to lead the world down this path through our example.

See, and this chart tells a story. The United States has emitted more $CO_2$ than any other country in history, and we are also going to lead the world in the solutions and the answers. The upcoming COP26 will serve as a vital test. When global leaders meet in Glasgow next week, almost every nation around the world, including big polluters like China, will be challenged to increase their climate ambitions.

President Biden is on his way there, he just told us, to help lead the world on those solutions. This year, the President has already pledged to slash America's greenhouse gas emissions in half by 2030. And as COP26 starts next week, it is up to us in Congress to help achieve that goal.

In this committee, we have focused on the solutions. We have talked about the opportunity to create millions of good-paying jobs, to protect the health of our children, and safeguard our economy, and of our imperative to ensure environmental justice for communities of color and Tribes.

And, today, we are going to focus on those international benefits that come with solving the climate crisis, because not only will reducing pollution make life better for families here in America, it will also strengthen our partnerships abroad as we work with other nations to do the same.

But there are major challenges to international cooperation. The overarching one is straightforward. How do we keep global temperatures from continuing to rise? We can start by making those generational investments in clean energy, powering our homes with renewables, and expanding our use of zero-emissions technologies. But we know we cannot do this alone.

Another challenge is the need to invest in adaptation, because, while cutting carbon pollution is critical, we must also focus on helping communities adapt to climate impacts that are already here. Without expanded adaptation and resilience, we will continue to see suffering, not only in America, but across the globe, especially in low- and moderate-income communities. That is why we must invest in measures that will help families prepare today while also reducing the risk of broader instability.

Climate action gives us an opportunity to transform our world for the better. The upcoming climate conference reminds us all that we are all fighting the same fight. By the power of America's example, we will lead the world and rise to this challenge. We simply don't have another choice.

[The statement of Ms. Castor follows:]

**Opening Statement of Chair Kathy Castor**

**Hearing on "International Climate Challenges and Opportunities"**

**Select Committee on the Climate Crisis**

**October 28, 2021**

*As prepared for delivery*

Over the past several decades, climate change has fueled increasingly destructive weather events around the globe. Last year, Australia faced its costliest disaster in history, as massive fires burned across their country. In Germany and Belgium, towns were recently hit with two months' worth of rain in only two days, leading to deadly floods. In Central America, climate-fueled droughts and floods are killing crops, devastating economies, and driving migration. And in India and Pakistan, families are suffering through longer and hotter heat waves.

Climate change is a global crisis. According to a recent study, the climate crisis impacts more than 85% of the world's population. Although each nation is impacted differently, it's clear we must work together to solve it. We have to choose a path forward. One path is paved with inadequate action, which will lead to continued destruction, as we continue to kick the can down the road. But there is a brighter path. It is paved with generational investments in renewable energy and electric vehicles, in environmental justice and climate resilience. And it leads us to a net zero emissions world, one in which future generations can thrive.

The United States has the responsibility to lead the world down this path through our example. The upcoming COP26 will serve as a vital test. When global leaders meet in Glasgow next week, almost every nation around the world—including big polluters like China—will be challenged to increase their climate ambitions. President Biden has already signaled his willingness to lead in that regard. This year, the President pledged to slash America's greenhouse gas emissions in half by 2030. And as COP26 starts next week, it's up to us in Congress to help achieve that goal.

In this committee, we've focused on how solving the climate crisis will bring incredible benefits in America. We've talked about the opportunity to create millions of good-paying jobs; of the need to protect the health of our children and safeguard our economy; and of our imperative to ensure justice for communities of color and tribes. Today, we're going to focus on the international benefits that come with solving the climate crisis. Because not only will reducing pollution make life better for families here; it will also strengthen our partnerships abroad, as we work with other nations to do the same.

But there are major challenges facing international cooperation on dealing with this crisis. The overarching one is straightforward: how do we keep global temperature from continuing to rise? We can start by making generational investments in clean energy, powering our homes with renewables, and expanding our use of zero emissions technologies. But we know we cannot do it alone.

The second big challenge is financial. Historically, some of the world's least developed countries have been the most affected by climate impacts, including sea level rise, floods, and droughts while being the least responsible for climate-fueling pollu-

tion. Solving the climate crisis will require us to use international climate financing to partner with countries to develop their economies in climate-smart ways. In fact, President Biden has already called on Congress to double our pledge for international climate financing by 2024. He understands that, by helping developing countries reduce their pollution and build resilience, the United States can help billions across the world not only survive, but thrive.

Finally, another major challenge is the need to invest in adaptation. While cutting carbon pollution is critical, we must also focus on helping communities adapt to climate impacts that are already here. Without expanded adaptation and resilience support, we'll continue to see suffering across the globe, especially in low- and moderate-income communities. That's why we must invest in measures that will help families prepare today, while also reducing the risk of broader instability.

Climate action gives us an opportunity to transform our world for the better. The upcoming climate conference reminds us that we're all fighting the same fight. By the power of our example, we will lead the world and rise to the challenge. We simply have no other choice.

At this time, I will recognize Ranking Member Graves for a 5-minute opening statement.

Mr. GRAVES. Hey, thanks, Madam Chair. Appreciate the hearing today. And I want to thank our witnesses for joining us.

I share the Chair's objective of moving in a direction of even lower emissions and clean energy transition. But, unfortunately, as I sit here and listen to the opening statement, I have got to tell you, I feel that that might be about where our views—our common views end, unfortunately.

Madam Chair, I feel that we have got to be a bit more candid about reality. We have got to be a bit more candid about what is going on in the world today, what has gone on in the world in recent years in regard to strategies that have worked and strategies that haven't.

Madam Chair, we are seeing right now record energy prices, escalation in prices in energy that is affecting every single American. It is costing people more to fuel their cars. It is costing people more to heat and cool their homes. And let's be really clear. This is absolutely, positively the result of actions and inactions of this administration.

I can't even begin to explain to people at home, nor should I even try to, how in the world it can be that our administration, our White House in America, the leaders of this country, are out there facilitating projects like the Nord Stream 2 pipeline; facilitating Russian dirtier energy into the European Union; and at the same time, shutting down the exact same types of projects in the United States, where this administration leading this American country, the leaders of our 330-plus million citizens, are out there saying, You can't produce domestic energy and conventional fuels, yet going in the same breath to Russia, to Saudi Arabia, to Venezuela, to Nigeria, to Iran and saying, we would like for you to increase the production of the very resources we are preventing from being produced in the United States.

Madam Chair, I want to see our President treat Americans the same way that he is generously treating citizens of other countries. I don't get it. It doesn't make sense, and American citizens are paying the price today.

And as every hearing as we sit here and listen to folks demonize the United States, this is the 26th COP—the 26th COP, and you know what? Global emissions are still going up. If people in our office failed 26 times, they would be having—they would have had a pink slip long ago.

It is not okay for us to be out there in this global stage talking about all of these commitments that disproportionately penalize the United States economy, that are extraordinary deviations from the very strategies that have resulted in the United States being the global leader in reducing emissions.

And sitting there, as we have in testimony today, propping up countries like China—and it is fascinating to me seeing letters written by environmental communities saying things like, "we are deeply troubled by the growing Cold War mentality driving the United States' approach to China—an antagonistic posture that risks undermining much-needed climate cooperation."

Let me ask you how we are supposed to act whenever you have a country that lies about what is going on with a global pandemic; that in the same breath, they are telling the World Health Organization nothing is going on; that they are buying billions of pieces of masks and gloves that were manufactured in China and previously sold to other countries and buying it back into China so their citizens have protection, and so they can then price gouge the rest of the world on the same PPE.

How are we supposed to treat a country that has gone out there and stolen, through cyber attacks, intellectual property, innovation of Americans?

How are we supposed to treat a country that has gone out there and, in illegal trade practices, dumping products on the U.S. economy, killing jobs, affecting millions and millions of jobs in the United States? Are we supposed to be nice to these folks? The country that is increasing emissions four times for every—four tons for every one ton we are reducing in the United States?

Madam Chair, as the United States has led the world in reducing emissions, the global community has increased tenfold for every ton we have reduced.

Let me say it again. You can look at the strategies—and Europe is a great example for us. California is a great example for us. We can either follow strategies that work or we can continue to do what you all are trying to do right now, manipulating technologies, taking options away from innovators and, at the end of the day, resulting in higher emissions, resulting in higher prices. It is a flawed approach, and we have the evidence to prove it. It is irresponsible for us to continue in this direction.

I yield back.

Ms. CASTOR. Without objection, members who wish to enter opening statements into the record have 5 business days to do so.

Now I would like to welcome our witnesses. We will hear from experts on the challenges and opportunities for international climate action as world leaders prepare to gather in Glasgow for COP26.

First, Taryn Fransen is a Senior Fellow at the World Resources Institute Global Climate Program, where she focuses on long-term climate strategies and nationally determined contributions, with a view of leveraging these and other policy instruments in support of rapid decarbonization.

In 2018, Taryn served as a Senior Policy Advisor on the Global Climate Action Summit for the Office of the Governor of California.

And prior to that, she led WRI's Open Climate Network, a coalition focusing on countries' commitments under the Paris Agreement.

The chair now recognizes Representative Bonamici to introduce Tjada D'Oyen McKenna.

Ms. BONAMICI. Thank you, Chair Castor.

It is my pleasure to introduce Ms. Tjada D'Oyen McKenna, Chief Executive Officer of Mercy Corps, which is headquartered in Portland, Oregon, just a few blocks from the congressional district I represent.

Ms. McKenna leads a global team of more than 5,400 humanitarians who provide immediate relief to save lives and livelihoods in more than 40 countries, reaching 37 million people. Previously, she served as Chief Operating Officer of CARE, where she oversaw the organization's programming and global operations.

I want to thank Ms. McKenna for spending time with the committee this morning and for providing her organization's important perspective. I look forward to hearing more about the important work Mercy Corps is doing, in particular, its efforts to increase climate and disaster resilience in vulnerable communities around the world.

Thank you, Chair Castor, and I yield back.

Ms. CASTOR. Next is Charles Hernick. He is the Vice President of Policy and Advocacy at Citizens for Responsible Energy Solutions Forum, where he leads policy work and executes strategies to advance clean energy solutions and innovative approaches to reducing carbon emissions.

Charles has decades of experience working in economic development, energy, and natural resource management across the United States and on the ground in dozens of countries.

Next, Alden Meyer is a Senior Associate at E3G, working on United States and international climate policy and politics. He is a Principal at Performance Partners, which provides a range of consulting services to clients in government, business, and the nonprofit sector. Alden has more than four decades of experience on environmental and energy issues and is an expert on the United Nations' Framework Convention on Climate Change, the Paris Agreement, and other aspects of international climate policy.

Without objection, the witnesses' written statements will be made part of the record.

With that, Ms. Fransen, you are now recognized to give a 5-minute presentation of your testimony. Welcome.

**STATEMENTS OF TARYN FRANSEN, SENIOR FELLOW, WORLD RESOURCES INSTITUTE; TJADA D'OYEN MCKENNA, CHIEF EXECUTIVE OFFICER, MERCY CORPS; CHARLES HERNICK, VICE PRESIDENT OF POLICY AND ADVOCACY, CITIZENS FOR RESPONSIBLE ENERGY SOLUTIONS FORUM; AND ALDEN MEYER, SENIOR ASSOCIATE, E3G, INC.**

**STATEMENT OF TARYN FRANSEN**

Ms. FRANSEN. Chair Castor, Ranking Member Graves, and members of the committee, thank you for inviting me to testify. My name is Taryn Fransen, and I am a Senior Fellow in the Climate Program at the World Resources Institute, a nonprofit, nonpartisan

environmental think tank. My work focuses on greenhouse gas pathways and targets.

You asked me to testify regarding how we can get on track to limit climate change to less dangerous levels. Before I do that, I want you to know where I am coming from.

On Sunday, I sat in the dark to write this testimony, as an atmospheric river knocked out power to my house. Two months ago, on the day my nephew was supposed to start kindergarten in South Lake Tahoe, he was instead in a car heading north to flee the Caldor fire. We watched the fire perimeter hour by hour to see whether he would have a home to return to.

These are climate impacts. They are hurting Americans today, and they pale in comparison to what less-fortunate communities face. We are out of time for excuses.

So, there are three points I hope you will take from my testimony. First, policies being implemented by countries around the world today put us on track for warming of 2.8 degrees Celsius, or 5 degrees Fahrenheit. That is too high. It is dangerous.

Second, to change that trajectory, we need to cut emissions in half by 2030. That means rapidly transforming the systems that propel our economy, like power generation, industry, transport, and agriculture. We know what changes we need to make, and we stand to benefit from those changes.

Third, this Congress is facing a once-in-a-generation opportunity to change the course of history by passing strong climate investments as part of the Build Back Better Act and the bipartisan Infrastructure Investment and Jobs Act.

Let's look at where we are headed today. Global greenhouse gas emissions grew 1.3 percent per year over the last decade to reach a record high in 2019. While the recent downturn shaved a few percentage points off 2020 emissions, they are already bouncing back, and this year's emissions are expected to match prepandemic levels. But to get on the least cost pathway to limit warming to 1.5 degrees Celsius, we need to cut emissions in half over the next 9 years.

Under current policies, we are on track to experience warming of around 2.8 degrees Celsius, or 5 degrees Fahrenheit. If we factor in the additional targets that countries are setting for 2030 under the Paris Agreement, which aren't yet backed up by policies, we will do a little better.

And if countries like the U.S. and China that have set net-zero-emissions targets manage to meet them, we will be on track for 2 degrees Celsius, or 4 degrees Fahrenheit. But even that is too much.

Temperatures to date have risen less than half that amount, and scientists say that warming was responsible for the devastating heat wave that killed hundreds in the Pacific Northwest this summer. It also increased the likelihood of storms like Hurricane Ida by two to three times, taking lives and causing billions in damage.

We know what we need to do to get on a different path. A report launched today by WRI and its partners identifies 40 key benchmarks that we need to meet over the next decade in order to avoid the worst climate impacts. To name just a few, by 2030, we need to increase the share of electric vehicles in light-duty vehicle sales

to between 75 and 95 percent, phase out public financing for fossil fuels, and increase crop yields by 18 percent.

We are not starting from a standstill. We are moving in the right direction, but too slowly, and we need to accelerate dramatically. As the world's largest economy, the United States has the ability to do just that. And because we have emitted more carbon than any other country, we have the obligation to do so.

We took a strong step by committing to cut emissions in half by 2030. This target is ambitious and achievable, but it will not implement itself. Congress should do three things to help.

First, Congress should pass ambitious legislation to cut emissions in line with our commitment.

Second, Congress should position the U.S. to help drive emission reductions globally. One important avenue is to ramp up bipartisan support for international funding for clean energy, forest protection, and resilience.

Finally, further innovation can broaden our options for driving net emissions down to zero. Therefore, Congress should ramp up RD&D funding for clean technologies. We can't pick and choose among these steps. We need to do them all, and, fortunately, they will benefit Americans.

Reducing emissions means advancing clean, efficient energy and ecosystem restoration, which create more U.S. jobs per dollar invested than the fossil fuel sector. Supporting climate finance abroad improves our national security and helps U.S. business benefit from the $23 trillion low-carbon investment opportunity in emerging markets.

We have a long way to go to address this crisis. A wide range of policies can help us get there, but we need ambitious legislation, and we don't have time to waste.

Ultimately, Congress will be judged not on the specific measures it deploys, but on the extent to which it acts quickly to place the country on a just and equitable path to meet its climate targets.

Thank you.

[The statement of Ms. Fransen follows:]

**Testimony of Taryn Fransen**

**Senior Fellow, Global Climate Program, World Resources Institute**

**U.S. House of Representatives Select Committee on the Climate Crisis**

**Hearing on *International Climate Challenges and Opportunities***

**October 28, 2021**

**Introduction**

My name is Taryn Fransen and I am a Senior Fellow in the Global Climate Program at the World Resources Institute (WRI). WRI is a non-profit, non-partisan environmental think tank that goes beyond research to provide practical solutions to the world's most urgent environment and development challenges. My work at WRI focuses on national and global greenhouse gas emissions pathways and policies; greenhouse gas accounting, monitoring, reporting, and verification; climate change policy in major economies; and the international climate change negotiations. I have been a lead author of the UNEP Emissions Gap Report since its third edition in 2012.

I have been invited to testify today on the state of global climate action: Where greenhouse gas emissions are today, where they are headed under our current policies and pledges under the Paris Agreement, and what more is needed to ensure we deliver on our pledges and keep ramping up action to limit warming to 1.5°C (2.7°F).

I will focus my testimony on three main points:

**Summary**

(1) The domestic policies that countries around the world have adopted to date put the planet on track to warm by 2.8°C (5.0°F). The latest international commitments for 2030 under the Paris Agreement go a bit further, limiting warming to 2.7°C (4.9°F). And if countries achieve their pledges to drive net emissions to zero by mid-century, warming could be limited to 2.2°C (4.0°F).[1]

(2) These figures are a remarkable improvement from where we were before the Paris Agreement, when warming was estimated in the range of 4°C (7.2°F),[2] but even a 2.2°C (4.0°F) future represents a grave threat to Americans' health and economic well-being. Changing that future requires us to rapidly transform the systems that propel our global economy, including power generation, buildings, industry, transport, land-use, and agriculture.

(3) Congress is currently facing a unique, once-in-a-generation opportunity to pass strong climate policy and investments as part of the Build Back Better Act and the bipartisan Infrastructure Investment and Jobs Act, positioning the United States to deliver on its commitments under the Paris Agreement. Congress must seize this moment and do its part.

**Where are global greenhouse gas emissions today, and where are they headed under current policies?**

Global greenhouse gas emissions grew on average 1.3 per cent per year over the last decade to reach a record high of 58.1 $GtCO_2e$ in 2019.[3] While the COVID–19 pandemic led to an unprecedented drop in emissions during 2020, in the range of 5.8 to 6.3 percent, this decline stemmed from a temporary economic slow-down, and emissions are on the rise again. This year (2021), emissions are expected to roughly match pre-pandemic levels.[4]

Countries are increasingly putting in place policies to change this trend. At last count, 3 out of 4 countries had framework climate legislation in place, and the number of climate policies in action throughout the world had risen to around 1,800.[5] The expansion of climate policies over the past decade has reduced projected 2030 emissions by about 14 percent.

Current policies are likely to limit warming to 2.8°C (5.0°F). While this is a remarkable improvement relative to the 4°C (7.2°F) estimated prior to the adoption of the Paris Agreement, the consequences for Americans will still be serious. To date, average annual temperatures have risen by just 1°C (1.8°F) across the contiguous United States, and already, the average heat wave season in many cities is now 40 days longer than it was 50 years ago, heavy precipitation events have become more frequent and intense across most of the country, and drier conditions have combined with warming to contribute to an increase in large forest fires in the West and Alaska.[6] These and other impacts will become more severe with every additional fraction of a degree of warming, potentially to the tune of 3.6–4.2 percent of GDP.[7]

**How much progress are we making under the Paris Agreement?**

Under the Paris Agreement, countries must commit to deeper emissions reductions at least every five years. The second round of pledges—following the first round that took place when the Agreement was adopted in 2015—is now ongoing in the lead-up to COP26 in Glasgow. So far, 145 countries have submitted new or updated emissions-reduction pledges for 2030.[8] These pledges, together with further reductions that countries have announced informally, would reduce emissions by around 4 gigatons $CO_2$-equivalent relative to the first round,[9] more than the total

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[1] UNEP, "Emissions Gap Report 2021"

[2] UNEP, "Emissions Gap Report 2014"

[3] 2019 emissions were 58.1 $GtCO_2e$ including land use, land-use change, and forestry (LULUCF) and 51.5 $GtCO_2e$ excluding LULUCF.

[4] UNEP, "Emissions Gap Report 2021"

[5] Eskander and Fankhauser, "Reduction in greenhouse gas emissions from national climate legislation"

[6] Reidmiller et al, "Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment"

[7] Hsiang et al, "Estimating Economic Damage from Climate Change in the United States"

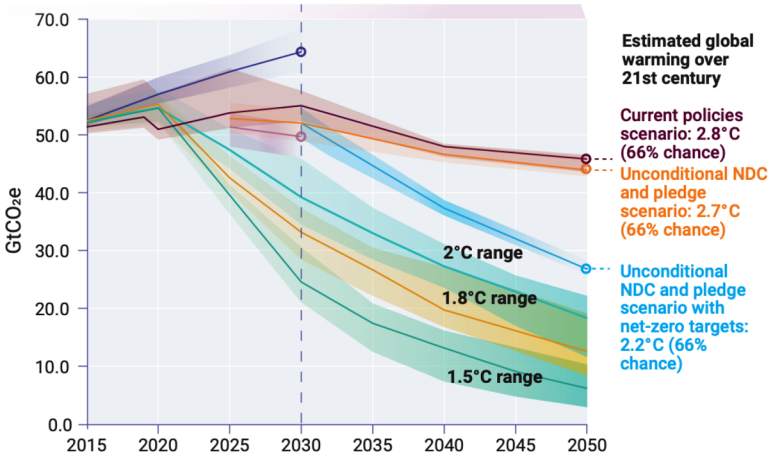
[8] Climate Watch, "2020 NDC Enhancements Tracker" (as of October 25, 2021)

[9] UNEP, "Emissions Gap Report 2021"

annual emissions of India.[10] That more than doubles the impact of 2030 pledges compared to the first round, and would limit warming to 2.7°C (4.9°F). However, we still need to reduce 2030 emissions by 7 times more in order to match the least-cost pathway to 1.5°C (2.2°F).

In addition to these 2030 pledges, countries are also increasingly recognizing the need to achieve net-zero emissions by mid-century—that is, to reduce emissions as far as possible, and then ensure that any remaining emissions are counter-balanced by carbon removals, for example, via forests or technological carbon dioxide removal. It is critical to understand that if we do not reach net-zero emissions, warming will not stop—at any level. Sixty-five countries to date, including both the United States and China, have made net-zero pledges.[11] Germany and Sweden aim to reach net-zero by 2045, Iceland by 2040, and Finland by 2035—5, 10, and 15 years earlier than the United States, respectively. If these pledges are delivered, we could limit warming to around 2.2°C (4.0°F).

**Figure 1 | Global GHG emissions and temperature outcomes under current policies and pledges**




Source: UNEP, "Emissions Gap Report 2021."

**How much more do global greenhouse gas emissions need to be reduced to avoid the most dangerous impacts of climate change?**

Projected emissions in 2030 under current pledges are one-third higher than the median in scenarios consistent with limiting warming to 2°C (3.6°F), and more than double the median in scenarios consistent with limiting warming to 1.5°C (2.7°F) (Table 1). To match the least-cost pathway consistent with limiting warming to 2°C (3.6°F), we would need to reduce emissions by 4.7 percent per year from 2019 to 2030, and to 1.5°C (2.7°F), 12.4 percent per year. If we had begun reducing emissions a decade ago, we could have pursued this transition somewhat more gradually, but now we have given ourselves no choice other than fast, steep reductions.[12]

[10] Climate Watch, "Historical GHG Emissions"
[11] Climate Watch, "Net-Zero Tracker" (as of October 25, 2021)
[12] If global emissions had begun to fall a decade ago, they would need to fall 1.7 per cent per year to limit warming to 2° C (3.6°F) and 3.3 per cent per year to limit warming to 1.5° C (2.7°F).

**Table 1 | Projected Emissions and Size of Emissions Gap in 2030** ($GtCO_2e$, median, 10th percentile and 90th percentile)

| Scenario | 2030 Emissions | 2030 Emissions Gap | |
|---|---|---|---|
| | | *Gap to below 2°C (3.6°F)* | *Gap to below 1.5°C (2.7°F)* |
| **Current policy** | 55 (52–58) | 15 (12–18) | 30 (28–33) |
| **Unconditional NDCs**[13] | 52 (49–55) | 13 (10–16) | 28 (25–30) |
| **Conditional NDCs** | 50 (46–52) | 11 (7–13) | 25 (22–28) |
| **Below 2°C (3.6°F)** | 39 (33–49) | | |
| **Below 1.5°C (2.7°F)** | 25 (17–33) | | |

Source: UNEP, "Emissions Gap Report 2021."

**What specific changes are needed to limit warming to 1.5°C (2.7°F)?**

The latest climate science makes clear that decision-makers must accelerate transformations toward a net-zero carbon emissions future at a far faster pace than recent trends to keep the window open to achieve the 1.5°C (2.7°F) goal.[14] These rapid, far-reaching transformations must occur across every sector—shifting how we power our homes and businesses, transport people and goods, grow our food, construct buildings, protect our forests and much more.

In a report launched earlier this morning, my colleagues translate these transformations required to avoid the worst climate impacts into 40 key indicators, or benchmarks for 2030 and 2050. The report assesses recent global progress towards these benchmarks and identifies how much work remains to be done to deliver a zero-carbon world in time.

Important progress toward meeting some of these benchmarks, particularly in the transport sector, is already well underway here in the United States, as well as in key U.S. allies and competitors. For example, McKinsey estimates that if U.S. electric vehicle (EV) adoption continues to accelerate, EVs will make up half of U.S. passenger car sales by 2030.[15] Incentives and significant investment in EV infrastructure under consideration by Congress could further that acceleration. And the United States is not alone. Having announced its intent to phase out internal combustion engine vehicles,[16] China is aiming for 20 percent of sales to be EVs by 2025, equivalent to 7 million vehicles.[17] The city of Shenzhen (population 12.5 million) has already switched to 100 percent electric buses [18] and is in the process of electrifying its taxi fleet. While we are not yet on track to achieve the benchmark of 75 to 95 percent of sales by 2030, this does represent meaningful progress by two of the world's largest economies.

On the power front, we know that we must increase the share of renewables in electricity generation to 55 to 90 percent by 2030 and 98 to 100 percent by 2050 to keep 1.5°C in sight. Here too, there has been progress both at home and abroad: The United States has committed to reaching 100 percent clean electricity by 2035, installing 35 gigawatts of new renewable generating capacity in 2020 alone by the end of January 2021, the United States had 169 gigawatts of wind and solar capacity.[19] China, meanwhile, committed $818 billion to renewable energy capacity from 2010–2019—more than double the U.S. sum of $392 billion.[20] India is also pursuing an ambitious clean energy future, aiming to quintuple its renewable capacity

[13] The Gap Report estimates global emissions under unconditional NDCs, which are the commitments countries pledge to achieve unilaterally, and under conditional NDCs, which are typically more ambitious pledges contingent on certain conditions, such as international financial support.

[14] Boehm et al, "State of Climate Action 2021: Systems Transformations Required to Limit Global Warming to 1.5°C"

[15] Fischer et al, "A Turning Point for US Auto Dealers: The Unstoppable Electric Car"

[16] McDonald, "China to Ban Petrol and Diesel Cars, State Media Reports"

[17] Reuters Staff, "China Targets 35 Million Vehicle Sales by 2025, NEVs to Make up One-Fifth"

[18] Lu, Xue, and Zhou, "How Did Shenzhen, China Build World's Largest Electric Bus Fleet?"

[19] McLaughlin and Bird, "The U.S. Set a Record for Renewables in 2020, but More Is Needed"

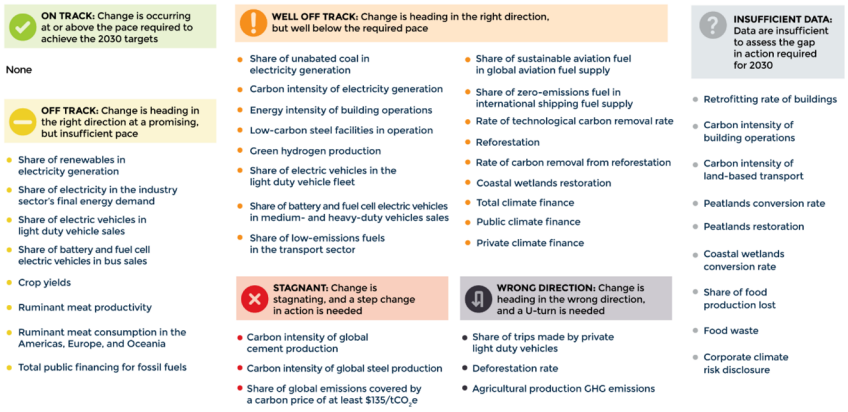
[20] Frankfurt School-UNEP Centre and BNEF, "Global Trends in Renewable Energy Investment 2020."

to 450 gigawatts by 2030,[21] even as it endeavors to bring reliable electricity to 30 million people who do not yet have it.[22]

But it is not enough only to invest more in clean technology—we must also eliminate emissions from dirty technologies and put a stop to the activities that cause climate change. For instance, to meet 2030 objectives, the world must phase out unabated coal electricity generation five times faster than current trends. Eliminating subsidies to fossil fuels would be a good place to start—the United States has committed nearly three times as much support to fossil fuels as to clean energy since the start of the COVID–19 pandemic.[23] Likewise, we must also cut the rate of deforestation by 70 percent (relative to 2018), requiring a total U-turn in our current practices.

Ultimately, none of the 40 key indicators assessed in the new report are yet on track to reach their benchmarks (Figure 2). But as we look to change this picture, we are not starting from a standstill—25 of the 40 indicators are already moving in the right direction, albeit too slowly. The right policies and investments in the United States can do a lot to accelerate progress.

**Figure 2 | Progress toward 1.5˚C-aligned 2030 benchmarks**




Source: Systems Change Lab, "State of Climate Action 2021."

The good news is that we have a clear understanding of the puzzle pieces that must be put together to catalyze and sustain the transformational change that is required. Indeed, for each of the 40 indicators assessed, the report also outlines the required shifts in supportive policies, innovations, strong institutions, leadership, and social norms that are needed to unlock further progress. To build and nurture these enabling environments, governments must work proactively alongside the private sector, civil society, and citizens to ensure that the necessary levers and drivers are in place.

We also know definitively that the economic and social co-benefits that will accompany these transformations are enormous. Indeed, transitioning to the economy that we know we need to close the emissions gap will greatly improve human health, create more jobs, boost growth and competitiveness, preserve biodiversity, and more.

## The imperative of U.S. leadership

As the world's largest economy, responsible for more cumulative carbon emissions than any other country,[24] the United States has both the obligation and the ability not only to decarbonize its own economy, but also to influence other countries to do the same. The Biden Administration took a strong first step by committing the

[21] "PM's Remarks at Climate Action Summit 2019 during 74th Session of UNGA," *Narendra Modi*

[22] IEA, IRENA, UNSD, WB, and WHO, "Tracking SDG 7: The Energy Progress Report 2021."

[23] Energy Policy Tracker, "United States"

[24] Warming is a function of cumulative carbon emissions. Since 1850, the United States has produced far more cumulative emissions than any other Party to the Paris Agreement—55 percent more than the European Union, and nearly twice as much as China (ClimateWatch 2021). This means that the United States bears proportionately more responsibility for warming to date.

United States to reduce emissions by 50 to 52 percent from 2005 levels by 2030. This target is both ambitious and achievable, but it will not implement itself. There are three things that Congress can do to help.

First, Congress should pass ambitious legislation to cut greenhouse gas emissions and deliver on our pledge to halve emissions by 2030. The good news is that recent analysis by the University of Maryland, RMI, and WRI for America Is All In shows that an "all-in" policy package that leverages state and local leadership combined with ambitious federal action can cut U.S. emissions by 52 percent by 2030.[25] Achieving these reductions would entail decarbonizing the electricity sector; electrifying and improving the efficiency of buildings, transport, and industry; and enhancing the carbon storage potential of forests, farms, and coastal wetlands. A similar analysis by the Rhodium Group found that an extensive, but non-exhaustive, set of policies could cut emissions by 45 to 51 percent.[26] Key components of an ambitious climate package—like long-term and enhanced clean energy tax credits and investments in transportation electrification, natural climate solutions, the equitable deployment of low- and zero-emission technologies, the electric grid, efficient and climate smart buildings, and more—are included in legislation Congress is considering right now, with relevant provisions in the Infrastructure Investment and Jobs Act and the Build Back Better Act.

Second, Congress should position the United States to engage effectively in international climate diplomacy and play a strong role in driving the Paris Agreement forward. One important avenue is for Congress to build on its successful bipartisan efforts to maintain international funding for clean energy, forest protection, and resilience.[27] Funding like this supports national security[28] and can help U.S. businesses[29] to benefit from an estimated $23 trillion in low-carbon investment opportunities in emerging markets,[30] in addition to ensuring that the United States fulfills longstanding international commitments. The Biden Administration has committed to provide $11.4 billion a year by 2024 in public finance to developing countries to support climate action,[31] and Congress should appropriate funding to help deliver on that commitment and ideally go beyond it. Even with the new pledge, the United States still lags its peers: European Union countries are already delivering more than double the amount of international climate finance as the United States has pledged to provide by 2024, even with a combined economy three-quarters the size.[32] Such funding is a strategic investment that pays dividends by reducing the severity and costs of climate impacts at home and abroad.

Finally, while ambitious near-term actions are possible with existing technologies, further innovation in clean technology can broaden our options for ultimately driving net global emissions down to zero, which we must achieve around mid-century to limit warming to 1.5°C (2.7°F). Innovation can also reduce costs and improve the competitiveness of U.S. businesses. Therefore, Congress should ramp up research and development funding across the power, transport, buildings, industry, and land sectors, as well as technology-based carbon removal.[33] Investments in these priorities are also a part of the Infrastructure and Build Back Better legislation currently moving through Congress, which include important provisions on direct air capture, industrial decarbonization, clean hydrogen, addressing aviation emissions, and research and development.

The U.S. economy will benefit from bold climate action. Many studies have found that strong U.S. climate action is consistent with long-term economic growth and a healthy job market.[34] Forty-one U.S. States grew their economies while reducing energy-related $CO_2$ emissions from 2005–2017. This includes states in all parts of the country, including Maryland and Maine in the Northeast, Alabama and Georgia in the South, Indiana and Ohio in the Midwest, and Alaska and Nevada in the

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[25] Kennedy et al, "Blueprint 2030: An All-In Climate Strategy for Faster, More Durable Emissions Reduction"

[26] Larsen et al, "Pathways to Paris: A Policy Assessment of the 2030 US Climate Target"

[27] Thwaites, "4 Climate Finance Priorities for the Biden Administration"

[28] Thwaites, "US Climate Finance: A Great Deal for the Nation and the World"

[29] U.S. business can benefit from, and contribute to, climate action, but their political actions and the actions of their trade associations does not always reflect this reality. Meyer and Menninger, "6 Ways to Prevent Greenwashing and Risks from Trade Associations"

[30] IFC, "Climate Investment Opportunities in Emerging Markets: An IFC Analysis."

[31] Mountford, "STATEMENT: US Announces New Finance Pledge for Developing Country Climate Action"

[32] €21.9 billion ($25.4 billion) in 2019. Council of the EU and European Council, "Climate Finance: EU and Member States' Contributions Continued to Increase in 2019"

[33] Mulligan, Amador, and Deich, "Wanted: $325 Million for Federal R&D to Jumpstart Carbon Removal"

[34] Saha and Jaeger, "America's New Climate Economy: A Comprehensive Guide to the Economic Benefits of Climate Policy in the United States"

West.[35] In 2020, renewable electricity employed 517,000 Americans and an additional 2.1 million Americans worked in energy efficiency jobs.[36] Renewable energy, energy efficiency, and ecosystem restoration create multiple times as many jobs as the fossil fuel sector per each $1 million invested in the United States.[37] Other low-carbon sectors are job creators, too. For example, investments in public transit, walking, and cycling create more jobs than investments in highways. New renewable energy power is increasingly cheaper than existing fossil fuels. Eighty-six percent of U.S. coal-fired power plants in 2021 are more expensive to keep operating than it would be to build new renewables,[38] and even nearly a third of U.S. gas-fired power plants units are lossmaking.[39] High fuel prices mean even more may become uneconomical. Further, through intentional policy design and targeted investments, benefits of climate action can contribute to an equitable clean energy transition that builds prosperity across society, by guiding funding to communities that are historically and currently marginalized, discriminated against, or disadvantaged. This is already a priority being implemented by President Biden's administration through the Justice40 Initiative and their commitment to 40 percent of the overall benefits from federal climate investments flowing to disadvantaged communities.[40]

**Conclusion**

Congress has a once-in-a-generation opportunity to start delivering on these needs now, by realizing the Biden Administration's Build Back Better Agenda and passing into law both the climate-smart spending in the Infrastructure Investment and Jobs Act and the essential climate investments under consideration in the Build Back Better Act. Further, establishing a well-designed carbon price could drive additional, long-term emissions reductions economy-wide and demonstrate the U.S. commitment to climate action. A range of policies, as well as legislative and administrative levers, can drive both domestic emissions reductions and international ambition. Ultimately, the legislation will be assessed not based on the specific policy instruments it deploys, but on the extent to which it places the country firmly on a just and equitable track to meet its climate targets.

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Ms. CASTOR. Thank you, Ms. Fransen.

Ms. McKenna, you are recognized for 5 minutes to provide your testimony.

## STATEMENT OF TJADA D'OYEN MCKENNA

Ms. MCKENNA. Thank you.

Good morning, and thank you, committee Chair Castor, Ranking Member Graves, and members of the House Select Committee on the Climate Crisis.

My name is Tjada D'Oyen McKenna, and I am the Chief Executive Officer of Mercy Corps, an international humanitarian and development organization.

As was mentioned earlier, our global team of 5,400 humanitarians operates in 40 countries where our work supports more than 37 million people, including to adapt to a change in climate.

One of our flagship programs is providing services and products by mobile phone to 3 million farmers across seven countries to help them improve climate-informed agriculture practices, from planting drought-resistant seeds to accessing innovative financial services.

While climate change affects every country on every continent, its effects are not shared equally. People already burdened by poverty, violence, and hunger suffer the harshest consequences while having the least ability to cope.

Climate change is one of the main drivers of the global hunger crisis. Global hunger has been dramatically rising over the past 5 years and today, roughly 155 million people are experiencing acute food insecurity.

Extreme weather events are reducing harvests, raising food prices, driving migration, and generating new conflicts, contrib-

uting to the reversal of years of gains in income growth and food security.

We have effective tools for solving hunger, but we now need to build climate change adaptation into that equation. For example, in Guatemala, where rising temperatures have contributed to long periods of drought, crop loss, and low food production, Mercy Corps has partnered with Colorado State University to leverage its predictive weather modeling expertise to help farmers make more informed decisions about planting, harvesting, and storing.

And in Nepal, where changing weather has led to severe crop losses, we have helped farmers increase their yields by 61 percent through new climate-smart agriculture practices.

Climate change is a threat multiplier, sparking violence and conflict. Our teams see firsthand how interconnected conflict and climate change are. For instance, in the eastern Democratic Republic of the Congo, while climate change affects every country on every continent, its affects are not shared equally.

In the Democratic Republic of Congo, our FARM Program provided community members with negotiations and dispute resolution training, empowering them to work with local authorities to establish a new land access and leasing program for thousands of small-scale farmers.

Unfortunately, the communities that need the most help are being left behind as the most fragile countries are passed over for safer options. Only 25 percent of bilateral climate financing and less than 50 percent of major multilateral funding targets countries most vulnerable to climate change. And, in 2019, less than 1 percent of climate adaptation funding went to the 10 most fragile states.

It is possible to reverse the trend. Mercy Corps has helped millions of people worldwide adapt to a changing climate, sowing drought-resistant crops in Ethiopia, using state-of-the-art technology to cope with flooding in Nepal, and distributing drought-resistant seeds to boost harvests in Haiti. But we need the help of donors, including the U.S. Government.

First, it is vital to recognize that communities urgently need help to adapt to the changing climate. It is too late to focus solely on reducing emissions. The U.S. Government can demonstrate leadership by increasing resources dedicated to its climate adaptation accounts, particularly for the U.S. Agency for International Development.

I was pleased to see the increase for climate adaptation funding in the pending Fiscal Year 2022 State and Foreign Ops appropriation bills, and I hope the House of Representatives will match the Senate's more generous proposal. I also urge the United States to galvanize private sector investment and sustainable climate finance.

Second, the U.S. Government must ensure that its assistance is going to the most climate-vulnerable places, and particularly to those that are conflict affected. Adaptation efforts should be locally led, include a strong investment in digital infrastructure, and have a special focus on small holder farmers, especially women and young people.

Lastly, U.S. climate adaptation assistance should build on and reinforce our other development assistance to prevent conflict, hunger, and poverty.

I thank this Select Committee for its commitment to helping vulnerable communities adapt to climate change, and I look forward to questions later.

Thank you.

[The statement of Ms. McKenna follows:]

**Written Testimony of Tjada D'Oyen McKenna,**

**Chief Executive Officer, Mercy Corps**

**House Select Committee On The Climate Crisis**

**Hearing on International Climate Challenges and Opportunities**

**Thursday, October 28, 2021 10:30 AM EST**

**Written Testimony**

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It is possible to reverse the trend. Mercy Corps has helped millions of people worldwide adapt to a changing climate: sowing drought-resistant crops in Ethiopia, using state of the art technology to cope with flooding in Nepal and distributing drought-resistant seeds to boost harvests in Haiti. But we need the help of donors, including the U.S. government.

First, it is vital to recognize that communities urgently need help to adapt to the changing climate. It is too late to focus solely on reducing emissions. The U.S. government can demonstrate leadership by increasing resources dedicated to its climate

adaptation accounts, particularly for the U.S. Agency for International Development. I was pleased to see the increase for climate adaptation funding in the pending Fiscal Year 2022 State and Foreign Operations Appropriations Bills, and I hope the House of Representatives will match the Senate's more generous proposal. I also urge the United States to galvanize private sector investment and sustainable climate finance.

Second, the U.S. government must ensure that its assistance is going to the most climate vulnerable places, and particularly to those that are conflict-affected. Adaptation efforts should be locally led, include a strong investment in digital infrastructure and have a special focus on smallholder farmers, especially women and young people.

Lastly, U.S. climate adaptation assistance should build on and reinforce our other development assistance to prevent conflict, hunger, and poverty.

I thank the Select Committee for its commitment to helping vulnerable communities adapt to climate change, and I look forward to your questions.

Ms. CASTOR. Thank you very much.

Mr. Hernick, you are recognized for 5 minutes. Welcome.

**STATEMENT OF CHARLES HERNICK**

Mr. HERNICK. Thank you, Chair Castor, Ranking Member Graves, and members of the committee. I appreciate the opportunity to testify today.

My name is Charles Hernick. I am Vice President of Policy and Advocacy with an organization called Citizens for Responsible Energy Solutions. My testimony today is shaped not just by my experience here in the United States, but on the ground in over a dozen countries in Africa and Latin America.

I hope you remember three points from my testimony today. The first is that there is no substitute for U.S. leadership in innovation. The second is that trade and aid must drive economic growth and opportunity, not just on the ground in the countries we are assisting, but here in the United States. And, finally, and in the spirit of Halloween, to remember that greenhouse gases are the bogeyman, not fossil fuels.

With respect to innovation, low-cost, low-emission technologies and goods will be successful to climate policy. Anything short of widespread adoption will fail to address the global issue. American innovations will be a key driver, and people all around the world are looking for the next 3M or General Mills, the next Ford or Tesla, the next IBM or Apple, to develop and deploy quality consumer products around the world.

In our climate-conscious era, quality means low-carbon, zero-carbon, or net-negative emissions technologies. That is why the most important role for the United States Government is to reduce greenhouse gas emissions by making strategic investments in innovation, research and development, such as those included in the Energy Act of 2020, which serves as a strong foundation for an all-of-the-above approach, focusing on renewables, nuclear, fossil fuel—fuel and energy efficiency, hydrogen, electrification, and carbon capture utilization and storage. All of these options must be on the table.

With respect to trade and aid, the United States leads the world in development assistance. We should be proud of that fact and continue our global commitments. But more important than the dollars of the direct aid is America's role in cultivating the right outcome: economic growth, a low-carbon future, and strong ties with our democratic allies around the world. That means also as-

suring that U.S. solutions are brought to the world through international trade policy at a cost that the developing nations are able and willing to pay.

U.S. Government must harness the power of free markets and be champions of free markets as we reexamine our regulations, trade, and intellectual property protections. That means avoiding mandates and subsidies. We live in an era where, even in the depths of a pandemic, companies large and small have voluntarily committed to carbon neutrality by mid-century. Government should empower companies to achieve their self-set goals, not pursue heavy-handed, top-down mandates that drive up costs and reduce options, not just here in the U.S. but around the world.

With respect to greenhouse gases, we need to remember that the data matters. Coal, oil, and natural gas are indispensable to the global energy system and the global economy. In 1971, coal, oil, and natural gas fueled 86 percent of the global energy supply. In 2019, this decreased only slightly to 81 percent.

I am a champion of renewables, and I am very proud of the fact that renewables have been able to grow in the United States at over 11 percent last year in the depths of a pandemic. But when you look at the globe, the energy mix is pretty stable. Dramatic reengineering of the global energy system hasn't happened, and while it is possible, it is not likely to happen in the next decade.

That is why we need to acknowledge that U.S. oil and gas is far cleaner than equivalent fuels from anywhere else in the world. For example, Russian-produced natural gas shipped by pipeline to Europe has about 41 percent higher life cycle emissions than U.S. liquefied natural gas shipped to the same destination. Russian-produced natural gas shipped by pipeline to China has 47 percent higher life cycle emissions than U.S. LNG.

When a resource is taken off the table, innovation in that area will grind to a halt. That is why Congress should continue to support carbon capture utilization and storage.

Government does not need to mandate that these technologies be adopted. Companies are doing it on their own. Completely cutting out fossil fuels in the short-term is simply not realistic. And given the high percentage of the energy mix that they still provide, we need to keep all options on the table.

Finally, there is a significant security concern with targeting U.S. fuels in our current global marketplace. America calling on OPEC to increase production undercuts our economic and national security objectives. Policies that restrict U.S. fossil fuel production, transportation, and exports in the name of climate change actually have the opposite effect; they contribute more to global emissions, not less, at a significant cost to America's reputation, security, and economic outlook.

Thank you for your time, and I look forward to questions.

[The statement of Mr. Hernick follows:]

**Testimony of Charles Hernick, Vice President of Policy and Advocacy, Citizens for Responsible Energy Solutions (CRES) Forum**

**To the U.S. House of Representatives, Select Committee on the Climate Crisis**

**For the Hearing "International Climate Challenges and Opportunities"**

**Thursday, October 28, at 10:30 AM EDT 210 Cannon House Office Building**

Chairwoman Castor, Ranking Member Graves, and Members of the Committee, thank you for the opportunity to testify today on "International Climate Challenges and Opportunities."

My name is Charles Hernick, and I am the Vice President of Policy and Advocacy for Citizens for Responsible Energy Solution (CRES) Forum. We are a 501(c)(3) nonprofit that educates the public and influences the national conversation around clean energy and climate solutions that are actionable, market-friendly, and responsible. My testimony is shaped by my experience not just here in the U.S. but on the ground in over a dozen countries in Africa, Latin America, and the Caribbean working to advance American interests abroad as a consultant to U.S. Agency for International Development.

In April, during "Earth Week," our executive director testified before this committee on ways that climate-focused goals could also create new jobs and catalyze economic growth. Although much has happened in a short period of time since that testimony, we continue to focus on three guiding principles for judging climate policy from a conservative perspective:

- Cut energy prices, not energy choices
- Export American Innovation, not American jobs
- Reduce global emissions, not America's economy

Nowhere do these principles matter more than in international climate negotiations, which are designed to advance common solutions to a truly **global problem**. To that end, I hope you will remember *three points* from my testimony:

**First, there is no substitute for U.S. leadership in innovation.** Low-cost, low-emissions technologies and goods will be critical to successful climate policy.[1] Anything short of widespread adoption will fail to address this global issue, and American innovation will be the key driver. People in every country look to the U.S. for the next Ford or Tesla, IBM or Apple, 3M or General Mills to develop and deploy quality consumer products around the world. In our climate conscious era: quality means low-carbon, net-zero, or negative emissions technologies. Innovative and low-cost climate solutions are needed for global uptake in developing countries in Africa, Latin America, and Asia, where too many people still lack basic services.

The most important role for the U.S. government in reducing greenhouse gas emissions around the world is to **make strategic investments in research and development (R&D), such as those included in the Energy Act of 2020**, which serves as a strong foundation to an *all-of-the-above* approach: renewables, nuclear, fuel and energy efficiency, hydrogen, electrification (i.e., electric vehicles), and carbon capture utilization and storage must all on the table. And it must not pick winners and losers in the marketplace.

**Second, aid and trade should drive economic growth and opportunity.** The U.S. leads the world in aid and development assistance.[2] We should be proud of that fact—and continue our global commitments. But more important than the amount of dollars of direct aid is America's role cultivating the right outcome: economic growth, a low carbon future, and strong ties with our democratic allies. That means also assuring that U.S. solutions are brought to the world through international trade policy, at a cost that developing nations are able and willing to pay.

To make a dent in global emissions, climate solutions must be as accessible and locally appropriate. This means driving down the cost of innovation as quickly as possible by eliminating unnecessary regulatory barriers, forcefully protecting the intellectual property of our homegrown innovations, and enabling the right market conditions for our companies to scale up manufacturing and distribution without delay.

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[1] See more about CRES Forum's Climate Policy Directives at: https://cresforum.org/climate-policy-directives/.

[2] OECD. https://www.oecd-ilibrary.org/sites/45472e20-en/index.html?itemId=/content/component/5e331623-en&_csp_=b14d4f60505d057b456dd1730d8fcea3&itemIGO=oecd&itemContentType=chapter

Trade policy should reward American companies with high environmental performance and assure they will not be undercut by countries and foreign businesses lagging in the race to reduce emissions.[3] Our geopolitical adversaries are willing to undercut American interests no matter what the implications are for climate change.

The U.S. government must lead the world to **harness the power of free markets as we reexamine regulation, trade, and intellectual property protection.** That means avoiding mandates and subsidies. We live in an era where even in the depths of a pandemic, companies large and small have voluntarily committed to carbon neutrality by definitive dates. Government should empower companies to achieve their self-set goals, not pursue heavy-handed, top-down mandates that drive up costs or reduce options in the U.S. and around the world.

**Third, greenhouse gas emissions are the bogeyman! Not fossil fuels.** Coal and oil and natural gas are indispensable to the global energy system. In 1971, coal, oil, and natural gas fueled around 86 percent of the global energy supply; and in 2019, this decreased only slightly to 81 percent.[4] While I am a champion of renewables—and very proud that solar and wind have taken off in the U.S. growing at 11 percent last year—when you look at the globe (total primary energy supply), the mix is about the same as it has ever been. A dramatic reengineering of the global energy system has not happened since President George H.W. Bush brough the U.S into the United Nations Climate Framework in 1992. It is possible, but unlikely that such dramatic change will happen in the next decade. While renewables will—and must—grow to tackle climate change, Congress can take pride in the fact that for a world dependent upon fossil fuels for the near future, U.S oil and gas is far cleaner than the equivalent fuels from anywhere else in the world. For example, Russian-produced natural gas shipped by pipeline to Europe has approximately 41 percent higher life-cycle emissions (carbon dioxide ($CO_2$) equivalent) than U.S. liquefied natural gas (LNG) shipped to the same destination.[5] Russian-produced natural gas shipped by pipeline to China has 47 percent higher life-cycle emissions than U.S. LNG exported to China.[6] In addition, heavy oil produced in Venezuela has 50 percent higher life-cycle emissions than light oil produced in Wyoming.[7] Of course, having the whole world consume U.S. oil and gas is not realistic or possible, but if we are serious about reducing emissions we cannot afford to take American oil and gas off the table.

When a resource is taken off of the table, innovation in that area grinds to a halt. That is why Congress should continue its **support of carbon capture utilization and storage**. Government does not need to mandate the adoption of these technologies and practices; companies are adopting it themselves to meet consumer demand. Low-carbon fossil fuels must be an important tool for climate policy as we transition to cleaner energy sources, not just in the U.S. but because the rest of the world also uses fossil fuels. Completely cutting out all fossil fuels in the short term is simply not realistic, given the high percentage of the energy mix they still provide, the reliability they ensure, as well as the increasing number of options that are available to reduce the carbon footprint of these fuels. Turning our back on the opportunities for innovation that can ensure that fossil energy emits significantly lower emissions would also be harmful for U.S. competitiveness.

Finally, there's a significant security concern with targeting U.S. fossil fuels in the current global marketplace. America calling on OPEC to increase production undercuts our economic and national security objectives. Policies that restrict U.S. fossil fuel production, transportation, and exports in the name of climate change in fact have the opposite effect. They contribute to more global emissions, not less, at a significant cost to America's reputation, security, and economic outlook.

*Good policy, not good rhetoric is needed to solve the climate problem*

With the 26th UN Climate Change Conference of the Parties (COP26) starting in a few days, it is important to be realistic about the 2030 target that the Biden Administration has embraced and how it is related to U.S. credibility in international climate politics.

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[3] Based on https://cresforum.org/climate-policy-directives/

[4] International Energy Agency (IEA), *World Energy Balances,* https://www.iea.org/reports/world-energy-balances-overview/world.

[5] Selina Roman-White et al., "Life Cycle GHG Perspective on Exporting LNG From the U.S. 2019 Update," *National Energy Technology Laboratory,* (September 2019). https://www.energy.gov/sites/prod/files/2019/09/f66/2019%20NETL%20LCA-GHG%20Report.pdf

[6] Ibid.

[7] Deborah Gordon et al., "Know Your Oil: Creating a Global Oil-Climate Index," *Carnegie Endowment for International Peace,* (March 2015). http://oci.carnegieendowment.org/

I am concerned that many of the policies implied to meet that target would threaten economic growth because they put government in the position to pick winners and losers and measure success in terms of dollars spent, irrespective of real inflation and deficit concerns. We need a suite of policies cutting across the major sectors, along with the necessary modernization in permitting that would enable the deployment of the clean energy infrastructure that we need. The Biden pledge under the Paris Agreement—a 50 percent to 52 percent reduction by 2030, compared to 2005—does not include specifics on how the US will meet this goal and eliminate 3 gigatons from our carbon balance sheet. According to the Energy Information Administration (EIA), while $CO_2$ emissions fell by 11 percent in 2020,[8] they are expected to grow roughly 8 percent this year.[9] Next year, EIA expects no change in $CO_2$ emissions.[10] Thus, America would need to reduce emissions by about 2 gigatons by the end of 2030—roughly one quarter of a gigaton a year. Since 1990, we have only reduced emissions by that amount twice: as a result of the financial crisis in 2008–2009 and COVID in 2020. The economic hardship from these crises should not be part of our climate plan.

Effective climate policy will rely on the power of free markets. Big government mandates favor incumbent technologies and large companies and are blind to what the free market can do. Additional bureaucracy is disproportionately threatening to small businesses and start-ups. Appetite for clean energy—by people and companies—has been growing steadily for decades and as a result, the private sector and effective state-level policies have achieved the goals of President Obama's Clean Power Plan carbon reductions 10 years ahead of time.[11] Indeed, it is a favorable American business environment that gives space for a record number of companies to put themselves on a path to net zero and differentiate themselves on "clean." Congress should encourage more of that race to the top, and successful climate policy can be measured based on whether the free market is incentivizing behavior and activities that support our climate goals.

And finally, America's interests and American jobs should be our number one priority when developing climate policy. The U.S. is more energy independent than we have been in decades and we should not lose that in the race to reduce emissions. This means that we need to address the entire supply chain of materials and technologies. It is encouraging that companies like Ford, General Motors, Tesla, and Volkswagen are building electric vehicles and battery plants in the U.S. to align supply chains with emerging markets. Domestically sourced critical minerals and metals utilized by domestic manufacturing facilities could supply the development of a clean energy transportation sector at home and abroad—but closing off areas for mining here in the U.S is problematic. For example, the Biden Administration's ordering of a study that could lead to a 20-year ban on mining upstream from the Boundary Waters Canoe Area Wilderness poses challenges to companies like Twin Metals Mining that are aiming to use environmental best practices to safely mine minerals critical to clean energy technology. Steps like this risk hemorrhaging more domestic jobs along the full clean energy and technology supply chain overseas. We must directly measure the effectiveness of our climate policy in our greenhouse gas emissions, job numbers, manufacturing metrics, the security of our supply chain, and our Gross Domestic Product.

**1. Innovation**

U.S. leadership in advancing global action to address climate change is indispensable. However, we need to get away from a 1990's climate policy conversation (a U.S.-centric view of the world) when the United States was a quarter of global emissions and the rest of the developed world was another 25 percent. When we could pursue unilateral policy—perhaps in coordination with a few other economies—that could make a major dent in global emissions. But we are not there anymore.

Today, more than 85 percent of all global greenhouse gas emissions occur outside U.S. borders—a share that will increase to over 90 percent by the end of the next decade. Worldwide emissions are increasing, as global energy demand is rising. The primary driver of this demand is developing economies as they increase their energy use and living standards rise. As a group, they are estimated to account for over 100 percent of the anticipated increase in global emissions through 2050.

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[8] "U.S. energy-related Dec. 16, 2021 emissions declined by 11% in 2020," U.S. Energy Information Administration (EIA), 12 April 2021,
https://www.eia.gov/todayinenergy/detail.php?id=47496.

[9] "U.S. Economic Assumptions and Energy-Related Carbon Dioxide Emissions," EIA, 13 October 2021, https://www.eia.gov/outlooks/steo/report/renew_co2.php.

[10] "Short-term energy outlook," EIA, 13 October 2021, https://www.eia.gov/outlooks/steo/.

[11] Bloomberg NEF and Business Council for Sustainable Energy (BCSE). *Sustainable Energy in America 2021. Factbook.* https://bcse.org/factbook/.

Accordingly, we need to figure out how to best leverage U.S. climate and energy policy to innovate and develop commercialization pathways that work in India, Nigeria, and Indonesia. We need to be clear headed about what poor countries can and will do.

*Recommendation: Make strategic investments in research and development (R&D).*

At the close of 2020, the COVID relief and year-end omnibus also included a broad modernization of our nation's energy policies. The *Energy Act of 2020* was the culmination of many years of significant bipartisan effort and marks the first comprehensive energy legislation passed in over a decade. It combined several bipartisan provisions and reflects the priorities of many members of Congress to accelerate the development of technologies needed to meet our environmental and economic challenges. The Act provides a timely and critical investment in the advancements in energy efficiency, energy storage, advanced nuclear, carbon capture, carbon removal, renewable energy, and other approaches needed to decarbonize our economy. Importantly, it brought bipartisan compromise on the phaseout of hydrofluorocarbons, which are greenhouse gases with extremely high warming potential.

The bipartisan *Energy Act of 2020* was an important down payment on energy innovation, but affordability also matters here at home. The impacts of the pandemic-induced recession have not been evenly distributed across America, nor are historic environmental burdens or the likely economic and health impacts of effects of climate change. Price increases make life even harder for these Americans. We can measure the success of our climate policy based on the availability of new energy innovations and whether they are priced for easy and widespread adoption.

As COVID–19 has been brought under control, the economy has recovered faster than many expected. The case for additional stimulus is limited, and overspending risks overheating the economy and further stoking the fires of inflation. Congress should fully fund *Energy Act of 2020*.

**2. Aid and trade should drive economic growth and opportunity.**

When history books are written about how we solved the climate problem, these years of the global COVID–19 pandemic will be a surprising turning point. There is a new, encouraging baseline. Companies across the U.S. economy voluntarily committed to renewable energy, as evidenced by more than 10.6 GW of corporate renewable energy purchases occurring in 2020, according to the Renewable Energy Buyers Alliance.[12] Companies across retail, big tech, and hospitality, among other sectors, have stepped up and made voluntary commitments to decarbonize their operations. That is why multi-billion or trillion-dollar pledges will not be a sign of success. Capital markets—driven by large investors and common stockholders alike—are focused on delivering a low-carbon future. Investors like Wells Fargo, Goldman Sachs, Bank of America, HSBC, Morgan Stanley, and Barclays have all committed to net-zero portfolios by mid-century.[13] More investors are factoring climate change into their portfolios, and it is easier than ever for Americans to align their 401(k) plans with a carbon-free future. There is no shortage of finance for mature clean energy technologies. Trillions in scattershot spending—in the U.S. and abroad—could crowd-out private sector investment. First and foremost, we should measure the success of our climate policy based on how well it encourages, not competes, with investment from America's financial industry.

This new baseline needs to be kept in mind as we revisit regulation, trade, and intellectual property protection. Frequently, policy that is ostensibly designed to address global climate change does not achieve the goals we seek. Entrepreneurs are rewarded with sales as customers seek suppliers that best fulfill their demands.

Mandates and subsidies, however, actively undermine this dynamic—by shifting costs from one party onto another. For their part, subsidies harm competition by alleviating inefficient producers of the need to cut costs to increase revenues, while unsubsidized competitors, which may be more efficient, are forced out of the market.

Studies by the Information Technology and Innovation Foundation (ITIF) have confirmed that such governmental policies harm innovation. In comparing subsidized Chinese solar module producers to U.S. manufacturers, for example, American companies invested less in innovation as they struggled to raise revenue in the face of competitors that were buoyed by Chinese governmental support. Our failure in solar manufacturing is a case study worthy of consideration. Solar was invented in the United States and then stolen by China, which has used predatory trade

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[12] Ben German. "Ranking 2020's corporate clean energy deals." *Axios,* February 11, 2020. https://www.axios.com/renewable-energy-companies-amazon-google-18db639c-e1e5-416f-8887-848e601131c6.html.

[13] American University. *Carbon Removal Corporate Action Tracker.* https://docs.google.com/spreadsheets/d/1vf-uXsf6fo7MuNpPya2Kz82Dxte0hHgtOXimgpRA3c/edit#gid=0.

practices and nearly destroyed our related manufacturing. The story is similar for manufacturing of solar cells and modules. Imports of those products supplied 88 percent of U.S. domestic demand in 2017.

*Recommendation: Normalizing transparency and reporting for sustainability markets such as voluntary carbon trading will help drive competition and investment.*

America's private and public sectors have made great strides in deploying clean energy and reducing emissions, but there is currently no way for these accomplishments to be documented and organized so that their collective impact can be better understood by investors and consumers.

Normalizing systems for carbon reporting will increase transparency and accountability, increase investment in clean energy and offsets, and further decrease U.S. greenhouse gas emissions without imposing unnecessary mandates, costs, or bureaucracy.

This type of limited federal effort could help protect investors and maintain fair and orderly functioning of voluntary carbon markets. State compliance markets would still need their own enforcement mechanisms. But for private actors in the voluntary carbon space, following federal transparency and reporting guidance could crowd-in investment the way that Energy Star mainstreamed energy efficiency in the early 1990s through a voluntary program. Perhaps most importantly, government can facilitate certainty and trust in voluntary, industry-established greenhouse gas emissions registries and bring greater definition to tradable carbon offsets without inventing a new federal system that attempts to supersede state progress.

In addition to helping industry meet climate change goals, this framework for carbon transparency would help U.S. companies outcompete foreign rivals, particularly Chinese companies that depend on high-carbon sources of energy for industry. Indeed, our polling shows that 72 percent of all voters, and 61 percent of Republicans, support requiring both foreign and domestic companies to label their products based on the type of energy used in production, and equal numbers support requiring government contractors to disclose carbon emissions in the production of their goods and materials.[14] Consumers want to know that their hard-earned dollars support companies that do not harm the planet. Providing easy access to that information will drive business back to American industry, boosting American jobs, our economy, and our national security.

**3. Keep the focus on greenhouse gas emissions**

Here in the United States, there's a lot of talk about transitioning away from fossil fuels—but you don't have that conversation in the developing world. While there is strong support for low carbon technologies in those countries, they all support traditional fossil fuel energy as well.

Consequently, we should develop a climate strategy anchored in the real world of today. The United States needs to leverage its policies to accelerate the overseas deployment of low carbon technologies to reduce or avoid increases in global emissions. Poor countries are unwilling to pay the green premium that we're willing to pay—they're focused on poverty eradication and energy access. Many of them also have fossil fuels, particularly coal, and there will be a strong incentive to tap those indigenous resources to enhance their own energy security, create jobs, and improve their balance of payments. Because developing countries are going to reject increasing the costs of conventional fuels, we must focus on driving down the cost of low carbon technologies to create a commercialization strategy that works for their market—and not just for ours.

Here in the United States there's a strong push to reduce greenhouse gas emissions by blocking fossil fuel infrastructure, including pipelines and terminals that would ultimately result in exporting that energy overseas. This is a misguided approach and detrimental to efforts to reduce global emissions. While it is important to push other countries to deploy low carbon technologies and systems, we must recognize that countries, even those in the European Union, will continue to use fossil fuels.

In reducing global emissions, the use of U.S. natural resources is key. As stated previously, the greenhouse gas life-cycle emissions of fossil fuels vary by supplier—often significantly. The potential emissions reductions from intra-fuel switching are significant. For example, if the European Union (EU) replaced its Russian natural gas for electricity production with U.S. natural gas, the associated global emissions

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[14] Citizens for Responsible Energy Solutions (CRES). *Poll: Republican, Democratic Voters Support Commonsense, "All-of-the-Above" Climate Solutions.*
https://citizensfor.com/pressreleases/poll-republican-democratic-voters-support-commonsense-all-of-the-above-climate-solutions/.

would fall approximately 72 million metric tons annually.[15] For comparison, the EU estimates that it needs to reduce its emissions by 78 million metric tons each year to reach its 2030 targets.[16]

*Recommendation: Welcome approaches that decarbonize oil and gas and coal, specifically carbon capture utilization and storage.*

With current technologies, it is possible to reduce, and perhaps someday fully decarbonize, the oil and gas sector. Oil and gas companies are focused on reducing upstream emissions, as well as sequestering and offsetting carbon. Despite incredible economic challenges this past year, oil and gas majors Total and Royal Dutch Shell announced ambitious plans to reach net zero greenhouse gas emissions by 2050, echoing similar announcements made by BP and Repsol in 2019. Total, for example, aims to achieve net-zero Scope 1 and 2 emissions by 2050 and it is targeting carbon neutrality for all its Scope 3 production and energy products sold in Europe by 2050.[17] Oxy Low Carbon Ventures, a subsidiary of Houston based Occidental Petroleum, delivered its first batch of "carbon-neutral oil" this past January.[18] Fueling up with carbon-neutral gasoline can only be part of the future through an all-of-the-above approach that is open to innovation in all sectors.

Government does not need to mandate this behavior; companies are adopting it themselves to meet consumer demand. Zero-emission fossil fuels can be an important tool for climate policy as we transition to cleaner energy sources, but only if we make it possible for oil and gas companies to deliver on those promises. Government can do that by removing barriers that currently inhibit transparency, certainty, and trust in carbon offset markets.

**Conclusion**

Over the past decade, America has reduced its carbon emissions more than any other country. This was achieved through an all-of-the-above energy policy combined with public and private sector investments in American innovation. There is no need to reinvent this wheel.

U.S. government efforts related to international climate policy can build upon our past success by maintaining American leadership through strategic R&D and innovation investments; harnessing instead of hampering the power of free markets; and focusing on reducing emissions from fossil fuels—not they are the most glamourous climate solutions—but because we must take a realistic view of energy supply and demand here in the U.S. and in the developing world.

Ms. CASTOR. Thank you.

Mr. Meyer, you are recognized for 5 minutes. Welcome.

## STATEMENT OF ALDEN MEYER

Mr. MEYER. Thank you, Chair Castor, Ranking Member Graves, and members of the Select Committee. My name is Alden Meyer, and I am a Senior Associate with E3G, Third Generation Environmentalism. I very much appreciate the opportunity to testify before you today.

I have been asked to discuss what needs to be accomplished at the COP26 summit in Glasgow that starts on Sunday, and what are the prospects for success.

As you just heard from Ms. Fransen, we already know that we will leave Glasgow with a huge gap between the collective level of ambition in the commitments countries have put forward under the Paris Agreement and what is required to keep 1.5 degrees alive

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[15] Assuming 35 percent of EU electricity generated from natural gas is sourced from Russia (244 million megawatt hours) and 297 kg$CO_2$e lower life-cycle emissions per megawatt hour from U.S. supply.

[16] "Gas 2019," *International Energy Agency,* (2019). https://www.iea.org/reports/market-report-series-gas-2019

[17] Francois De Beaupuy. "Oil Giant Total Targets Carbon Neutrality in 2050." *Bloomberg Green,* May 5, 2020. https://www.bloomberg.com/news/articles/2020-05-05/total-targets-carbon-neutrality-in-2050-as-profit-plunges-35?cmpid=BBD051220_GREENDAILY&utm_medium=email&utm_source=newsletter&utm_term=200512&utm_campaign=greendaily

[18] Eklavya Gupte and Paula VanLaningham. "US' Occidental supplies first cargo of 'carbon-neutral crude' to India's Reliance." *S&P Global,* January 29, 2021. https://www.spglobal.com/platts/en/market-insights/latest-news/oil/012921-us-occidental-supplies-first-cargo-of-carbon-neutral-crude-to-indias-reliance.

and avoid the worst impacts of climate change. In Glasgow, countries must acknowledge the need to increase ambition over the remainder of this decade and set out a process and deadline to make that happen.

On climate finance, it is good that developed countries have finally shown how they intend to meet their commitment to mobilize $100 billion annually in finance for mitigation and adaptation activities in developing countries out to 2025. But more work is needed to scale up finance for adaptation and to improve access to finance for smaller, vulnerable countries.

Countries also must agree at COP26 on the process and timeline for negotiating the goal for mobilizing even more climate finance after 2025. We already know that sums much greater than $100 billion a year are required to help developing countries such as India, Indonesia, and South Africa make the transition from fossil fuels to clean energy resources.

If the U.S. and other G7 countries are able to show how the Build Back Better for the World Initiative launched at their G7 summit in June will deliver clean infrastructure investments at the scale needed, it would help persuade some of the major developing countries to support the ambition accelerator language that we need in the final COP decision.

As Ms. McKenna just told you, many countries and communities are suffering from a range of devastating climate-related impacts, which will continue to mount over the next several decades even if we succeed in meeting the Paris Agreement temperature limitation goals.

Vulnerable countries are calling for much faster progress on mobilizing financial resources to help address the economic losses and the severe damage to lives and livelihoods that their citizens are experiencing as a result of climate impacts. How far we can get towards agreement in Glasgow that start to meet these needs remains to be seen.

Agreement on the rules for market mechanisms under Article VI of the Paris Agreement is an important objective for COP26, as is ensuring transparency on how well countries are doing in meeting their Paris commitments, both on constraining domestic emissions and on providing finance for developing country action.

Bringing China and other major developing countries closer to parity with developing nations on a robust reporting regime has been an objective of both Democratic and Republican U.S. administrations throughout the history of the climate negotiations.

Climate change and health issues are the driving themes for the G20 Leaders Summit that will take place in Rome this Saturday and Sunday. Italy's Prime Minister Mario Draghi will be pressing other leaders to agree on the need for more ambitious action between now and 2030 and for commitments to phase down coal consumption and to eliminate subsidies for fossil fuel production and use. If he can forge consensus on these issues, it will provide important impetus for progress in Glasgow.

Let me conclude by discussing three possible scenarios for the outcomes of COP26. A good outcome would see agreement on the need for more action to close the ambition gaps on reducing emissions, on increasing climate finance for both mitigation and adapta-

tion, and finance to address loss and damage. Environmental integrity would be prioritized in the Article VI rules, and a strong transparency framework would be agreed upon.

The slew of announcements made in Glasgow by governments, companies, and investors on sectoral initiatives to cut emissions would send strong signals on the irreversibility of the shift from fossil fuels to a clean energy economy.

A disappointing outcome would see no agreement on ways to close these ambition gaps. The rules on Article VI and transparency would be agreed, but with major compromises that weaken their effectiveness and raise concerns about environmental integrity.

An ugly outcome would see no agreement on the remaining elements of the Paris rule book and no real engagement at all on ways to close the ambition gap, with sharp divisions and finger-pointing between countries over who needs to do more to address the climate crisis.

Thank you again for this opportunity to share my thoughts with you, and I look forward to your questions.

[The statement of Mr. Meyer follows:]

**Testimony of Alden Meyer**
**Senior Associate, E3G—Third Generation Environmentalism**

**U.S. House of Representatives Select Committee on the Climate Crisis**
**Hearing on *International Climate Challenges and Opportunities***

**October 28, 2021**

**Introduction**

My name is Alden Meyer and I am a Senior Associate with E3G—Third Generation Environmentalism. E3G is an independent climate change think tank headquartered in London that operates with a global outlook. We work on the frontier of the climate landscape tackling the barriers and advancing the solutions to a safe climate. Our goal is to translate climate politics, economics and policies into action. Prior to joining E3G last December, I worked for 31 years for the Union of Concerned Scientists, concluding my tenure as its Director of Strategy and Policy and co-director of its Washington office. I have attended the climate negotiations since they first started in 1991 and have served as an informal adviser to numerous United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties presidencies.

I have been invited to testify today on the outlook for the 26th meeting of the Conference of the Parties to the UNFCCC that will open this Sunday in Glasgow, as well as the summit of G20 leaders that will be held this weekend in Rome. I will discuss why these meetings are important, the geopolitical context in which they are taking place, what needs to be accomplished at each of them, and what the prospects are for success.

First let me provide some context. As this committee knows well, the Paris Agreement, adopted by 196 countries on December 12, 2015, sets out a goal of "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change." [1] But in releasing its most recent Synthesis Report on Nationally-Determined Contributions under the Paris Agreement, the UNFCCC Secretariat noted that "The available NDCs of all 191 Parties taken together imply a sizable increase in global GHG emissions in 2030 compared to 2010, of about 16%. According to the latest IPCC findings, such an increase, unless actions are taken immediately, may lead to a temperature rise of about 2.7C by the end of the century." [2] Along similar lines, the 2021 Production Gap report produced by the United Nations Environment Program together with four research and policy organizations

[1] https://unfccc.int/sites/default/files/english_paris_agreement.pdf
[2] https://unfccc.int/news/full-ndc-synthesis-report-some-progress-but-still-a-big-concern

including E3G found that "Governments plan to produce more than twice the amount of fossil fuels in 2030 than would be consistent with limiting global warming to 1.5°C." [3]

Clearly, the challenge we face in reversing these trends in less than a decade is a daunting one. COP26 will serve as a litmus test of whether countries are serious about delivering on the temperature limitation goals they set under the Paris Agreement, accelerating adaptation to climate change, and mobilizing support for climate action including on loss and damage. This COP represents a pivot point from a system that for the last 30 years has been primarily focused on negotiation of treaties, protocols, agreements, and rules to one focused on the implementation of existing commitments and the need to ratchet them up quickly. National leaders, ministers, and negotiators coming to Glasgow will need to take a page from the growing number of governors, mayors, business leaders, investors, universities, and others who have taken bold action on climate change in recent years and are creating a culture of true collaboration and learning by doing. In a process that needs to focus on generating results on the ground, these "non-state actors" should be seen as active partners, rather than as mere observers.

This COP faces several challenges:

— while the recent joint US–EU commitment to vaccinate 70% of the globe by September 2022 signals progress, developing countries and NGOs continue to express frustration that wealthier nations are still not taking sufficient action to address issues of vaccine inequity and enhance global recovery through the G7, G20 and other multilateral spaces.
— the current global energy crisis which has seen sharp spikes in energy prices worldwide represents a potential wildcard for COP26 that as has been reported [4], could either make long-term decisions on climate action more difficult or instead could reinforce the narrative around the benefits of a diversified energy portfolio for building economic resilience.
— geopolitical tensions—especially between the US and China—are inevitably spilling over into multilateral spaces like the climate summit; we can see this dynamic at play in recent comments from Chinese officials reacting to calls for China to increase its domestic climate ambition by calling into question the ability of countries like the United States to fully implement their 2030 and 2050 commitments.
— increased public awareness of climate impacts is increasing expectations for action, and all the major powers say they want a successful outcome in Glasgow; but different perceptions of what "good" looks like could still derail negotiations while at the same time the fossil fuel industry and other incumbents continue to hold political sway in all too many capitals and many of them are using that influence to frustrate bold action.

**Benchmarks for Success**

*Raising Mitigation Ambition:* In the run-up to COP21 in Paris in 2015, countries put forward the emissions limitation objectives that they proposed to meet in the five- or ten-year period after 2020; these were referred to as "intended nationally determined contributions," or INDCs. It was clear at the time that these INDCs were collectively insufficient to meet the Agreement's temperature limitation goals; the decision adopting the Paris Agreement noted that "much greater emission reduction efforts will be required than those associated with the intended nationally determined contributions in order to hold the increase in the global average temperature to below 2°C above pre-industrial levels." [5] That decision requested countries to "communicate or update" their final Nationally Determined Contributions by late 2020 (when COP26 was originally scheduled to be held), in hopes that many countries would use that five year period to identify ways to raise the ambition of their initial Paris pledges.

While quite a few countries—including the United States—have put forward substantially enhanced NDCs, several of the largest emitting countries have yet to do so, and it's clear that we will leave Glasgow with a huge gap between the collective level of effort put forward by countries and the level required to meet the UK's declared goal of "keeping 1.5 alive." There needs to be language in the final COP26 decision acknowledging the need for additional efforts to raise ambition over the remainder of this decade and setting out a process to help make that happen. If we wait for 2025, when the next round of NDCs for 2035 or 2040 are scheduled to be

[3] https://productiongap.org/wp-content/uploads/2021/11/PGR2021_web_rev.pdf
[4] https://www.washingtonpost.com/world/2021/10/08/global-energy-crisis-cop26/
[5] https://unfccc.int/sites/default/files/resource/docs/2015/cop21/eng/10a01.pdf

put forward, it will be too late—we will have blown past the 1.5°C limit and condemned future generations to ever more devastating climate impacts.

The 48 nations that are part of the Climate Vulnerable Forum have called for "annual ambition raising platforms" at each COP through 2025 where countries can come forward with increased ambition on both mitigation and adaptation.[6] There have also been suggestions that COP28 in 2023 should be positioned as the next big political moment for countries to put forward more ambitious NDCs and finance commitments, as that is when we will see the culmination of the first Global Stocktake[7] mandated by the Paris Agreement, which will assess collective progress on climate mitigation, adaptation and finance flows and means of implementation and support. As we can already anticipate that the results of this stocktaking process will demonstrate a huge continuing gap in ambition, it should not only be used for its original purpose of informing the post-2030 NDCs that countries are expected to submit by 2025, but to also drive additional improvements to their existing Paris pledges out to 2030.

The question, of course, is whether the UK can produce an agreement on such "ambition accelerator" language as part of the final COP26 political package; while such an agreement would be consistent with the spirit of the Paris Agreement, it would clearly be a deviation from the letter of the decision adopting it in 2015, which envisioned just one such revision deadline in 2020. The UK presidency has indicated it will conduct intensive consultations on this issue—which is not part of the formal negotiating agenda—over the two weeks in Glasgow.

At what the UK is touting as the "ambition COP," national governments, states, cities, companies, investors, and others are expected to sign up to a range of significant 'sector deals' on energy, nature and land, transport, adaptation, finance, innovation, industry, and other sectors, aimed at signaling an acceleration of the transition to a 1.5°C pathway. Deals will be announced to phase down coal consumption, cut methane emissions, fund clean power, further constrain fossil fuel finance, restore nature and protect biodiversity, boost uptake of zero emission vehicles, and grow high ambition alliances like the Race to Zero campaign[8] launched by the UNFCCC Climate Champions from Chile and the UK. It is critical that these pledges are backed by real and urgent implementation actions which are transparent and independently verifiable, so we know how much these initiatives really add up to.

*Ramping Up Finance for Climate Action:* This past Monday, Canada's Environment Minister Jonathan Wilkinson and Germany's State Secretary Jochen Flasbarth released a Delivery Plan[9] intended to provide confidence to developing countries that developed countries will meet the commitment they made in Paris to mobilize $100 billion annually in public and private climate finance for mitigation and adaptation activities over 2020 to 2025. This $100 billion commitment has taken on iconic status in the climate negotiations process since it was first made in Copenhagen in 2009 and then reiterated in Paris in 2015, and the failure to meet this goal has been a barrier to building trust and confidence between developed and developing countries.

Whereas OECD data shows that climate finance only reached $80 billion in 2019—$20 billion below the 2020 target—the delivery plan shows that the gap will be bridged by 2023, after being nearly attained in 2022, and would be surpassed thereafter. Using conservative assumptions for mobilization of private finance, the Plan estimates that developed countries' collective mobilization of climate finance could reach almost $120 billion by 2025.

While the Plan is a step towards restoring trust, more actions will be required to meet developing country expectations around scaling up the quantity and quality of predictable adaptation finance (which represents less than a third of total climate finance to date, despite the Paris Agreement calling for a balance with finance for mitigation), as well as improving access to finance, particularly amongst smaller vulnerable countries.

The UK presidency needs to broker agreement by the end of the COP on the terms of reference, process and timeline for negotiations on the post-2025 finance goal that countries in Paris agreed should be established. While there is broad agreement that the goal needs to be greater than the $100 billion developed countries committed to mobilize annually starting in 2020, there isn't consensus on just how much greater the target should be, and there is resistance to the proposition

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[6] https://thecvf.org/our-voice/news/press-releases/climate-vulnerable-nations-lay-out-expectations-for-glasgow-cop26/

[7] https://unfccc.int/topics/global-stocktake

[8] https://unfccc.int/climate-action/race-to-zero-campaign

[9] https://ukcop26.org/wp-content/uploads/2021/10/Climate-Finance-Delivery-Plan-1.pdf

advanced by the US and other developed countries that the base of donors needs to be expanded to include China, some of the OPEC countries, and developing country members of the OECD. This is likely to be one of the crunch issues occupying ministers in the final hours of the COP.

Of course, sums much greater than $100 billion a year are required to help developing countries such as India, Indonesia, and South Africa make the transition from fossil fuels to clean energy resources. A report released in June by the International Energy Agency, the World Economic Forum, and the World Bank finds that "clean energy investment in emerging and developing economies declined by 8% to less than USD 150 billion in 2020, with only a slight rebound expected in 2021. By the end of the 2020s, annual capital spending on clean energy in these economies needs to expand by more than seven times, to above USD 1 trillion, in order to put the world on track to reach net-zero emissions by 2050." [10]

Unlocking this nearly order of magnitude higher level of climate finance for the decarbonization of developing country economies is not on the formal negotiating agenda in Glasgow, but it has been the focus of discussions that developed country officials—including Special Presidential Climate Envoy John Kerry and others from the United States—have been having in recent months with investors, developing country leaders and ministers, and others. The ability of the US and other G7 countries to increase confidence that the Build Back Better for the World (B3W) initiative [11] launched at their leaders' summit in Cornwall last June will deliver clean infrastructure investments at the scale needed could go a long way to persuading some of the major developing countries to support the "ambition accelerator" language that is needed in the COP26 decision. Beyond Glasgow, further efforts to scale up the share of the portfolios of the World Bank and other multilateral development banks going towards climate-friendly investments could also make a major contribution towards this goal.

*Loss and Damage:* This term refers to the now-unavoidable impacts that many countries and communities are experiencing as a result of climate change, both extreme events such as hurricanes and typhoons, torrential floods, and out-of-control wildfires, and so-called slow onset impacts such as desertification, droughts, and sea level rise. These consequences will continue to mount as a result of past and ongoing emissions of greenhouse gases, even if we succeed in meeting the Paris Agreement temperature limitation goals.

Vulnerable countries and NGOs such as the Climate Action Network are pushing for loss and damage to become a standing agenda item on COP agendas in order to create a political space to address the fact that seven years after creation of the Warsaw International Mechanism on Loss and Damage, there has been little progress made on mobilizing financial resources to help address the economic losses and the severe damage that all too many people are now experiencing as a result of climate impacts. They also want the Santiago Network on Loss and Damage agreed to at COP25 to be operationalized at COP26 and to go far beyond being merely an informational website, with adequate funding for a secretariat and activities of the Network. Finally, they want a process coming out of Glasgow that will tee up real deliverables at COP27 in Africa late next year on finance for loss and damage, above and beyond the current flows for adaptation and resilience.

These are tough issues (they almost led to the collapse of negotiations at the end of COP18 in Doha), and the UK presidency has been slower to take them up than would have been desired; but reports out of the pre-COP ministerial consultations in Milan two weeks ago indicate that they are now clearly on the political radar screen. Discussions with the US and other developed countries also show they recognize the need to take a more constructive stance in their engagement with vulnerable countries on loss and damage, which in the past has been too often polarized by developed countries' concern about creating open-ended liability for their past emissions. But how far we can get towards agreements in Glasgow that meet the legitimate needs of the vulnerable countries on the loss and damage issue remains to be seen.

*Completion of the Paris rulebook:* while COP26 does represent a pivot from negotiations to implementation, there are still some unfinished pieces of business on the Paris rulebook, including agreement on the rules for market mechanisms under Article 6 and finalization of the transparency guidelines and tables for reporting on progress towards each country's nationally-determined contributions under the Paris Agreement.

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[10] https://iea.blob.core.windows.net/assets/6756ccd2-0772-4ffd-85e4-b73428ff9c72/FinancingCleanEnergyTransitionsinEMDEs—WorldEnergyInvestment2021SpecialReport.pdf

[11] https://www.whitehouse.gov/briefing-room/statements-releases/2021/06/12/fact-sheet-president-biden-and-g7-leaders-launch-build-back-better-world-b3w-partnership

On Article 6, this will be negotiators' third swing at resolving the sharp differences that blocked agreement at COP24 in Katowice, Poland and at COP25 in Madrid. Major issues include how to avoid double counting of emissions reductions by countries engaging in such market transactions, whether some portion of the credits generated by the emissions trading mechanisms of the Kyoto Protocol—particularly its Clean Development Mechanism—can be carried forward into the Paris Agreement regime and sold in the market, and whether a share of the proceeds generated by such market transactions should be dedicated to funding adaptation activities in developing countries. In the run-up to COP25, a group of 32 countries put forward the San Jose Principles for High Ambition and Integrity in International Carbon Markets,[12] which are supported by most international NGOs and set the high bar for an acceptable outcome. While there are reports[13] that Brazil, which has been one of the main obstacles to reaching agreement on an environmentally robust set of Article 6 rules, may be softening its stance, a lot of work remains to get this issue over the finish line in Glasgow.

Ensuring transparency on how well countries do in meeting their commitments under Paris—both on constraining domestic emissions and on providing finance and other means of support for developing country action—was a centerpiece of the agreement in Paris, and bringing China and other major developing countries closer to parity on the frequency and robustness of reporting on emissions inventories and domestic actions has been an objective of both Democratic and Republican US administrations throughout the history of the climate negotiations. The detailed reporting guidelines and tables to operationalize the Paris transparency rules are supposed to be finalized in Glasgow, but China and some other developing countries are pushing for more flexibility in how they are to be applied than the US and other developed countries are willing to accept. Given that this issue is both technical and intensely political, I expect it to be resolved only in the final hours of COP26.

**The G20 Leaders' Summit**

The G20 Leaders' Summit will take place in Rome this Saturday and Sunday. The leaders of China, Russia and Japan are expected to participate virtually, while President Biden and the other leaders will attend in person. Climate and health are the driving themes of the Summit and Italian Prime Minister Draghi will be chairing the meeting and pressing for agreement on the need for more rapid decarbonization to get the world on a pathway that limits the rise in global temperature to 1.5°C through a commitment to global net-zero greenhouse gas emissions by 2050 and increasing the ambition of their 2030 Nationally-Determined Contributions in the early 2020s; these proposals build on the communique[14] issued by G20 Climate and Energy ministers at their meeting in Naples in July. Prime Minister Draghi will also be pushing for commitments to phase down coal consumption and finance as well as to eliminate subsidies for fossil fuel production and use, both issues that ministers were unable to resolve in July. It is expected that the G20 Sherpas will be unable to resolve these issues in their meetings today and tomorrow in Rome, and that it will be left to the leaders' discussion of climate and energy issues on Sunday morning for the disagreements to be hammered out.

The G20 leaders who are in Rome will then go to Glasgow to join leaders from over 100 other countries for the "World Leaders Summit" component of COP26 on November 1st and 2nd. The UK presidency has called on leaders, "alongside heads of international organizations, civil society and business leaders, to show that they are serious about working together to tackle climate change . . . and to set out the ambitious actions that they are taking to reduce emissions, scale-up adaptation and mobilize finance, and to collectively signal their commitment to ensuring that COP26 keeps 1.5°C in reach."[15]

The outcome of the G20 leaders' summit is important to success in Glasgow. If Prime Minister Draghi can forge consensus on tough issues such as ramping up climate action in this decade to keep 1.5°C alive and constraining use of unabated coal, it will provide important impetus for agreement on ambition accelerator language in the COP26 final decision. Conversely, if Italy's proposed language for the G20 leaders' communique on these issues is blocked by leaders from China, India, Russia, Saudi Arabia and other countries, it will make the UK COP26 presidency's work on this front much more difficult.

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[12] https://cambioclimatico.go.cr/press-release-leading-countries-set-benchmark-for-carbon-markets-with-san-jose-principles

[13] https://www.bloomberg.com/news/articles/2021-10-23/brazil-opens-door-to-carbon-market-deal-at-cop26

[14] https://www.g20.org/wp-content/uploads/2021/07/2021_G20-Energy-Climate-joint-Ministerial-Communique.pdf

[15] https://ukcop26.org/wp-content/uploads/2021/10/Presidency-Programme-COP26.pdf

There are also several finance issues in the purview of the G20 that are essential to make the progress we need in the real economy, including use of a portion of the new general Special Drawing Rights allocation implemented by the International Monetary Fund in August to help vulnerable developing countries deal with the risks to their financial stability posed by both the COVID19 pandemic and climate change, further development of international standards for what qualifies as sustainable finance, and policies on corporate risk disclosure, stress testing of financial institutions and other ways of addressing climate-related risks to the global financial system. Some progress was made on these issues at the meeting of G20 finance ministers in Washington earlier this month,[16] but much more work remains to be done, including by the German and Indonesian incoming presidencies of the G7 and G20.

**Scenarios for COP26 outcomes**

As the renowned Danish physicist Niels Bohr is reported to have said, "Prediction is very difficult, especially if it's about the future." But I will nonetheless attempt to lay out a few possible scenarios for the outcomes of COP26.

A *good outcome* would see the final COP26 decision laying out pathways over the next several years to close the gaps on the emissions reductions needed to secure 1.5°C (via more ambitious NDCs and side agreements on key sectors), increasing climate finance (via near-term action to mobilize resources well above the annual $100 billion pledged by developed countries as well as a robust start to the post-2025 finance goal negotiations), and adaptation (via a mandate on further development of the global goal on adaptation), along with a mandate to pursue new sources of finance to address loss and damage.

This outcome would see environmental integrity prioritized in the agreement on the Article 6 rules and agreement of a transparency framework that will enhance understanding of how well countries are doing in carrying out their commitments on both climate action and support. The slew of announcements and progress reports in Glasgow on sectoral initiatives to cut emissions would send strong signals to investors, companies, and the public on the irreversibility of the shift from fossil fuels to a clean energy economy.

A *disappointing outcome* would see no consensus for political agreements on ways to close the ambition gaps, with only small groups of countries agreeing side deals on key sectors and a subset of high ambition countries committing to enhance their NDCs before 2023. While mandates would be secured for additional diplomacy in the run-up to COP27 diplomacy to address the gaps on finance, adaptation and loss & damage, there would be little confidence that they would lead to the results needed.

The Paris rules on Article 6 and transparency would be agreed, but with compromises made that raise concerns about generating real benefits to the atmosphere (on Article 6) and providing the full level of information needed on country progress (on transparency).

An *ugly outcome* would see COP26 ending without agreement on the remaining elements of the Paris rulebook and no real engagement on ways to close the ambition gaps on 1.5°C, finance, and impacts, with sharp divisions and finger-pointing between countries over who needs to do more on each of these fronts. A lack of progress on climate finance, adaptation, and loss and damage issues would be used by some developing countries as justification for their resistance to doing more to decarbonize their economies, and the serious doubts that some are already expressing about the ability of the multilateral climate regime to come to grips with the climate crisis would gain traction.

Over the course of the next few weeks, we are likely to see competing narratives at play: one narrative will emphasize the successful progress made since Paris, the rapidly falling prices of clean technologies, and the growing number of both countries and non-state actors making transformational climate commitments; the other narrative will focus on the failure to get even close to where science requires us to be to secure a tolerable future for current and future generations, and the lack of a meaningful response to the increasingly devastating impact of climate change on vulnerable countries and communities. The paradox is that each narrative contains elements of truth, and it is certainly possible to embrace both of them simultaneously; what is needed in this moment is a mix of equanimity, realism, and respect for expressions of both grief and hope.

Regardless of the outcome at the end of COP26, 2021 has unlocked a new level of integration on climate action and positioned climate change as a top-tier geo-

[16] https://www.g20.org/wp-content/uploads/2021/10/G20-FMCBG-Communique%CC%81-Fourth-G20-FMCBG-meeting-13-October-2021.pdf

political issue for world leaders, which provides a foundation for further progress in 2022. Unlocking much greater investment in accelerating climate implementation must be a key focus of the German and Indonesian G7 and G20 Presidencies, while progress on the issues of adaptation, resilience and loss and damage—which have received insufficient attention throughout 2021—can hopefully be made under the likely Egyptian COP27 Presidency. Of course, both goals will be more attainable if we come out of COP26 with a positive outcome.

Ms. CASTOR. Well, thank you very much to our witnesses for your very insightful testimony.

And I recognize myself for 5 minutes for questions.

It was refreshing to hear a united panel, a message from this panel that the world needs American leadership when it comes to climate. For the Congress, the best way to demonstrate that leadership is to pass the Build Back Better, Infrastructure, and clean energy package, and we are on the cusp of doing that, so that is good news. It is also good news, in a selfish way, for American consumers, because we know investing in clean energy over time is going to lower costs for them.

But there is a bigger picture here as we all march to Glasgow. We are marching together with American businesses, states and local communities, scientists, innovators, farmers, churches, and the faith community. And I think the message is partly to keep the pressure on China and India and other large emitters to help them raise their level of ambition, and that has got to be part of the equation here.

So, Ms. Fransen, what risks do you see for America if we do not assume that leadership role and follow through? And then talk to us about the opportunities for America that renewed leadership would bring.

Ms. FRANSEN. Thank you. I will start with opportunities, actually, because there are many.

Assuming a leadership role on the climate crisis, it not only saves money for American households and businesses, as you noted, which currently spend a trillion dollars per year on fossil fuels, but it reduces costs in healthcare too. In one scenario for halving emissions developed by WRI and others, it was found that these actions would provide health benefits and avoid health costs to the tune of somewhere between $26 billion and $58 billion by 2030, not to mention the lives saved.

We also can benefit from increased competitiveness. As demand for clean technologies rises, focusing on low-carbon or zero-carbon manufacturing rather than doubling down on yesterday's industries is what is going to give the U.S. the advantage. So just, for example, the global lithium-ion battery market is projected to be $105 billion by 2025 as EVs gain traction. And as I noted, by 2030, there will be a $23 trillion climate-related market in emerging markets. And so if we don't pursue these clean technologies domestically and maintain and gain our competitive edge, we are going to be losing out on those opportunities.

I also want to mention the job potential. In the United States, investing in renewables and energy efficiency creates more than 2.5 times as many jobs as fossil fuels per dollar invested, and investing in ecosystem restoration creates 3.7 times as many jobs per dollar invested. So that is another opportunity that we are risking losing out on if we don't take action here.

Finally, I think this provides an important opportunity for rural America as well, and that is in terms of economic diversification. So wind companies are already paying farmers and other rural landowners something on the order of $220 million a year to host wind turbines, and this also generates tax revenue and other income down the value chain. And we can build on that by creating more opportunities in forest restoration, agroforestry, and regenerative agriculture.

So those are the opportunities. The risk if we don't take advantage of those is that we just lose out on all of that, and we lose out to countries that are acting faster. China is investing more than twice as much as we are in renewable energy. I don't know why we wouldn't want to take advantage of that for ourselves.

Thank you.

Ms. CASTOR. And thank you.

And, Mr. Meyer, the science tells us we don't have time to waste, why we were focused years ago on the goal of net-zero by 2050, but the latest IPCC report was a code red, and it said you better get going this decade. Talk to us about that, how important that is going into Glasgow.

Mr. MEYER. Yes. Thank you, Chair Castor.

The report issued just yesterday by the United Nations Environment Programme showed that we are on track for a 2.7-degree world, almost twice what we need to be aiming for, and emissions are going to increase by 16 percent by 2030 if we stay on the path we are on and countries don't take more action.

By contrast, we need to cut emissions almost in half over that period to have a 66 percent chance of keeping below 1.5 degrees. So it is code red. We have to dramatically scale up and accelerate the transition to a clean energy future, and that is the challenge for Glasgow.

Can we do it? I think that is the biggest question that will be before leaders and ministers when they gather next week in Scotland.

Ms. CASTOR. Well, hopefully the Congress will pass a good clean energy and infrastructure package to demonstrate we—America is taking a leadership role there and we are serious about acting this decade, right away. Thank you.

And I will yield now to Mr. Graves for 5 minutes for his questions.

Oh, excuse me. Ms.—we will go to Mrs. Miller first. You are recognized for 5 minutes.

Mrs. MILLER. Thank you, Chair Castor and Ranking Member Graves. And thank you all for being here today.

Out-of-control gas prices have risen over $3 in every state at this point. Natural gas prices are surging as Europe fails to meet its own energy demands, and Russia, shockingly, holds the lever of power over our allies, after our President gifted Putin a pipeline instead of promoting cleaner, safer, American-made energy.

President Obama was after coal during his Presidency, but now President Biden is here to finish the job, and it is not just coal that they are after. They are declaring war on American prosperity, a war on American energy independence, and a war on American working class, who will bear the greatest brunt of this burden, los-

ing their jobs, paying more for the lifestyle that Americans today have become accustomed to, like having electricity in their homes instead of candles, or taking a hot shower instead of dumping a bucket of cold water on their head. And this isn't just in America.

Chair Castor, I would like to submit to you for the record an oped from the President of Uganda, published in The Wall Street Journal just this past week, titled, "Solar and Wind Force Poverty in Africa."

**Submission for the Record**

**Representative Carol Miller**

**Select Committee on the Climate Crisis**

**October 28, 2021**

ATTACHMENT: Museveni, Y. (2021, October 24). "Solar and Wind Force Poverty on Africa." *Wall Street Journal.*

The article is retained in the committee files and available at: https://www.wsj.com/articles/solar-wind-force-poverty-on-africa-climate-change-uganda-11635092219

President Museveni writes that focusing on renewable energy projects in Africa earns praise in the U.S. and Europe, but leaves many Africans with unreliable and expensive electricity. While our global elite are trying to rewrite the rules for the entire world, they are subjugating developing countries to destitute destinies.

Affordable energy and capitalism have lifted more out of poverty than anything else. Allowing developing nations access to these resources is not only good policy, but it is also the morally right thing to do. Forcing Africa to live in poverty and darkness so that John Kerry can feel accomplished on his private jet is not only arrogant, but it is inexcusable.

I am not opposed to forms of renewable energy, but we must do it the right way. An all-of-the-above energy policy which complements our energy producing communities instead of destroying them, and it will build a stronger energy grid, more resilient communities, and a more united country.

Innovation in carbon capture technologies will mitigate the impacts of traditional energy sources without giving up American energy independence. This committee and this President must use science and technology and commit to commonsense energy policies, not radical progressive idealism.

Mr. Hernick, in your testimony, you explained how U.S. natural gas is much cleaner than natural gas from other foreign countries. Can you explain why U.S. gas is cleaner and how exporting more U.S. energy would actually lower global emissions?

Mr. HERNICK. Thank you, Congresswoman Miller, for the question.

And, in your statement, you bring up some of the—the real moral issue that is associated with tackling the climate problem. And I agree with you completely. And part of what we need to rely on is better data. I think a major challenge when you look at the U.S. oil and gas sector and what is produced, these are commodities, and historically we haven't done a good job of distinguishing what is the difference between U.S. oil and natural gas or petroleum products from other countries.

But it is time that we do that, and the reason is because, as the United States has grown in its economic development, we have implemented the highest environmental safeguards anywhere in the world.

When I was working for U.S. Agency for International Development, folks looked to the United States for best practices on how to protect waterways and keep the air clean. We have been doing that. We have been doing that as we extract natural resources, as we mine, as we develop oil and natural gas. And that means that we have a smaller environmental footprint, and we should be very proud of that fact.

I think it is part of what we need to do, is tell the story to the rest of the world that there is a comparative advantage that the United States has in cleaner oil and natural gas.

There is more that can be done, and part of the technologies that you talked about with—related to carbon capture, utilization, and storage, these are real technologies that are being implemented right now. If you are in the Washington, D.C. area, there is a plant not too far away from here in Maryland that captures carbon dioxide, it is a coal-fired power plant, it ends up as the fizzy bubbles in a lot of drinks.

Companies are investing in how to develop everything from concrete to yoga pants that is using carbon captured from the atmosphere and integrated into consumer products. That is a great direction to be headed in, and we shouldn't close that off.

Mrs. MILLER. Thank you. I yield back my time.

Ms. CASTOR. Rep. Bonamici, you are recognized for 5 minutes.

Ms. BONAMICI. Thank you so much, Chair Castor. And thank you to all of our witnesses.

I want to note that Ranking Member Graves, in his opening statement, said we need to be candid and talk about reality. Here is candid, and here is reality. Last summer, as Ms. Fransen mentioned, there was a heat dome in the Pacific Northwest that killed hundreds. Ocean acidification is affecting our coastal communities and economies, drought is threatening our crops and our farms, and glaciers are melting, and the sea level is rising.

So climate change, as we know, is an existential threat. We cannot rely on the free market alone to provide a sufficient response to its worst effects. And I do want to say that I reject the notion that a fossil fuel is fine if it is so-called cleaner than another fossil fuel.

A whole-of-government approach is necessary to meet the challenge domestically, and robust collaboration with the international community is necessary to meet that challenge.

I want to ask you, Ms. Fransen: Would you please discuss why relying on the free market and government-supported research and development alone is not enough to meet the scale of the climate crisis?

Ms. FRANSEN. Absolutely. So, to give some context here, from 2005 to 2018, U.S. energy-related $CO_2$ emissions fell 12 percent. Okay? But we need to reduce emissions more than four times faster than that over the next decade than we did from 2005 to 2018. So we need to be stepping on the accelerator here in a dramatic way. We can't just rely on what we have been doing in the past.

And, by the way, I think it is important to note as well that the declines in emissions that we have experienced to date are not only a result of the free market. We have invested significantly in tax credits for renewable energy that are responsible for the tremendous growth that we have seen in solar and wind. So even some of those gains that we have had so far, which are too little and not fast enough, are not solely the result of the free market.

So I don't think that there is any evidence that suggests that, if we sit back and do nothing, we will get to where we need to go. It is just not happening.

We know that successful policies can make a difference, that well-designed policies and measures like those in the Build Back Better Act are a critical part of what is going to get us to our emissions goals, which, by the way, are not simply to reduce emissions marginally, like the shift from coal to natural gas does, but to virtually eliminate emissions. That is where we are going. That is what we need to keep our eyes on.

Thank you.

Ms. BONAMICI. Thank you so much.

And I want to get another question in to Ms. McKenna, but I also want to note the importance in the Build Back Better and the policies that we are on the cusp of, as the Chair said, passing. These policies will create hundreds if not millions of jobs in this country. So I wanted to note that. It is so important to make sure that we send the message that people will be able to get these great jobs in renewable energy.

Ms. McKenna, thank you again for being here to discuss the work of Mercy Corps. And your testimony highlighted the effects of climate change on agriculture, including crop losses and food insecurity. So can you please outline the importance of U.S. climate leadership to the regions and the 40 countries in which Mercy Corps operates and explain how the U.S. should step up efforts to address global humanitarian issues that are exacerbated by the climate crisis?

Ms. MCKENNA. Thank you so much for the question. There are a few things and a few reasons why the U.S. should step up, but the main one is that it only makes common economic sense, particularly on the adaptation front.

So, the inequality that we are already seeing and experiencing and that is being worsened due to COVID will only widen and increase without immediate attention on adaptation and money from the U.S. Government. Much of that money is needed for the least-developed countries. And failing to act on this will only result in a huge economic and human toll. It will cause increases in poverty, increases in conflict, and severely undermines our long-term global prospects. So we are all aligned.

The second place where the U.S. should play a strong role with U.S. companies, governments, universities, all of us, is in innovation. A lot of the increase in access to energy that we have seen in the world has been because of new technologies and renewables and other energy things. But the old fossil fuel ways of bringing big power in Africa simply have not been able to come to fruition in that way.

So there are a lot of opportunities to keep using those technologies and opportunities for American businesses to help people to get more sources of renewable and decentralized power.

Finally, in addition to that, we need to be looking at the causes of conflict and addressing those as we look at climate change. Climate change only exacerbates conflict, and there are a lot of ways that we can work with local actors to do that, and looking at the root cause of climate is one.

For example, in northern Uganda, on the border, there are pastoral communities that use rivers and other things for their livelihood. We have been able to fund work that looks at—helps those communities determine land rights—usage rights over that water to decrease that tension between those communities and to prevent a more costly conflict in those areas.

So we have a lot to bring to the table. U.S. innovation, U.S. leadership is critical for us to be successful.

Ms. BONAMICI. Thank you so much, Ms. McKenna, for your testimony and also for the important work of Mercy Corps.

And I yield back.

Ms. MCKENNA. Thank you.

Ms. CASTOR. Thank you very much.

Mr. Graves, Ranking Member Graves, you are recognized for 5 minutes.

Is he not on the screen? All right. Then we will go to Mr. Carter. You are recognized for 5 minutes.

Mr. CARTER. Thank you, Madam Chair.

If I could take a moment of personal privilege, I want to announce, at 11:09 a.m., at Piedmont Hospital, Mary Emma Carter, the first child of my youngest son was born, and my sixth grandchild.

Ms. CASTOR. Congratulations.

Mr. CARTER. Thank you.

Ms. CASTOR. That is wonderful.

Mr. CARTER. Thank you.

Gosh. Let me start off somewhere.

Ms. McKenna, thank you very much. I found your testimony—I read it, and I found it very fascinating. And I want you to know that I agree with a lot of it. I think it hits at some of the concerns that I have got.

In your testimony, first of all, you say: "First, it is vital to recognize that communities urgently need help to adapt to the changing climate. It is too late to focus solely on reducing emissions."

And I have to agree with you there. I think that is a great point. I have the honor and privilege of representing the entire coast of Georgia, over 100 miles of pristine coastline. It is where I have lived all my life and where I intend to live the rest of my life, and it means a whole lot to me to make sure.

I have always said that we have to do three things. We have to practice mitigation, adaptation, and innovation. And I have to give credit where credit is due. My good friend from Alabama sitting beside me was the first one to say that that I heard it from, and I have been saying it ever since. And it is true. It is something I believe in.

You also said that—in your testimony: "U.S. climate adaptation assistance should build on and reinforce our other development assistance to prevent conflict, hunger, and poverty." And I agree with you on that too. I think that is a great point.

My question, though, is—is this: If the developing world is forced to use renewable solar and wind energy, would it increase prosperity or simply raise costs?

Ms. MCKENNA. Wow. Thank you for that question. I actually recently moved to the area from Georgia, so I agree with you on that pristine coastline, and I miss it.

As I mentioned earlier, we have seen a steady decrease in energy poverty, and it has been mostly due to renewable energies and then rapid growth in decentralized energy processes. The other, the rapidly declining cost of those has also been—enabled those usages of those. And for lower-income communities, renewables may be the only real chance to end energy poverty.

So we are continuing to see leapfrogging due to technology. We have things like increased financing, further reach, ongoing innovation to meet those needs, and improved policies will allow communities to make their own choices and to do the most cost-effective things.

Mr. CARTER. Would you agree—what about higher energy costs? Would that—with higher energy costs, are they going to help to prevent conflict and hunger and poverty or do just the opposite?

Ms. MCKENNA. Yeah. Higher energy costs are not helpful, which is why it is important to have multiple sources of energy to—

Mr. CARTER. Absolutely. Thank you very much. I appreciate that.

Mr. Hernick, I want to go to you. I want to ask you: As you are well aware, as we are all aware, since President Biden has taken office, he has done a number of things: canceled the Keystone XL Pipeline, rejoined the Paris Agreement, ended energy leases on Federal land, removed sanctions on the Nord Stream 2 pipeline, encouraged OPEC to pump more oil, and we are pumping less, encouraging them to pump more. I mean, it baffles me. He has proposed taxing natural gas, penalizing the use of all fossil fuels through the CEPP Plan and others.

First of all, I want to ask you: If all of these actions stay in place, all of them that he has taken action on so far, and the proposed ones are signed into law, will we still meet the climate goals set by the Paris Agreement?

Mr. HERNICK. Congressman, to achieve the climate goals set in the Paris Agreement, we need to bring the whole world along with us, and I think that that is part of the challenge, is that we cannot sacrifice the U.S. economy to achieve these goals alone. We need to take it with a global view on how we can reduce emissions the most, bring people out of poverty, meet their energy security needs, and do it while growing jobs and economic opportunity here in the United States.

Some of those proposals that you mentioned will deploy more renewables here in the United States. But this morning, I met with the Minnesota Chamber of Commerce and some folks from Twin Metals Minnesota that came in, and they are going to be unable to produce and open a mine in northern Minnesota that is adjacent to the Boundary Waters, a beautiful area that we want to preserve

and protect. But if we are not able to mine and develop critical minerals and resources in the United States, we are going to fail to meet what is an economic growth opportunity here too. And so that is where an all-of-the-above approach is absolutely necessary.

Mr. CARTER. Great. And how effective has the Paris Agreement been on reducing emissions in other countries and global emissions as a whole——

Mr. HERNICK. Not at all.

Mr. CARTER [continuing]. Thus far?

Mr. HERNICK. Not at all. Not at all effective. And I think that that is an important thing to recognize, is that even President Obama's Clean Power Plan that never came into being, set a goal, and the United States achieved that goal without the mandate 10 years ahead of schedule. And that is because of Federal policy as it relates to tax incentives, Federal policy as it relates to innovation, a lot of state action, and the action of corporate America.

And that is something I do want to talk a lot about. There are many, many companies, electric power utilities that are driving emissions down, headed to net zero.

One statistic that I will leave you all with is that, right now, 75 percent of American households are served by an energy utility that is on the path to net zero by mid-century. We don't need mandates if utilities are interested in heading in this direction already. Seventy-five percent of Americans.

Mr. CARTER. Great point. Thank you.

And I yield back.

Ms. CASTOR. Ms. Brownley, you are recognized for 5 minutes.

Ms. BROWNLEY. Thank you, Madam Chair.

Mr. Meyer, I wanted to ask you—and I apologize if I am repeating a question that I didn't hear previously, and I apologize for being late. But, in your testimony, you stated, you know, geopolitical tensions, especially between the United States and China—there is, you know, a dynamic at play certainly going on.

Do you believe there are meaningful areas where the U.S. could engage with China related to international climate policy where we could find some significant agreement? And, if so, which areas would you recommend the administration focus on in negotiations?

Mr. MEYER. Thank you, Representative. Yes, there are some areas. It is a very tense relationship. We are not going to agree on everything. China absolutely has to do much more if we are going to have any chance of staying at 1.5, even below 2 degrees Celsius.

We have been collaborating with China in some areas on clean energy technology. In the Major Economies Forum process over the years, the U.S. and China have been chairing the sustainable finance working group in the G20, which recently put forward a sustainable finance roadmap, which was adopted by finance ministers, including Secretary Yellen, earlier this month. So there are areas where we can collaborate.

We also have to recognize we are competitive rivals for the growing markets for clean energy technologies. And as others have stated, China is winning that race right now in terms of renewable energy, in terms of storage, in terms of electric vehicles and other technologies.

We are going to compete there and we know that, but we can play in a world that is dominated by rules and norms and standards, that drives innovation and drives technology deployment of clean technologies. And if we can reach agreement with China on that rather than competing sets of rules and norms, we will be ahead of the game.

Ms. BROWNLEY. Thank you for that. And I wanted to just follow up on a line of questioning that has already taken place here. But, you know, it is ironic that we are here talking about this, and, you know, behind closed doors, we are trying to figure out how to get to a—close to $1 trillion worth of investment in climate on the U.S.'s part.

So this is really a question for all of you. So if we can reach that agreement—and I believe we will ultimately, but, you know, we are not there yet—how does that play? I mean, it has got to help. I know that. But, you know, does it help a little? Does it help a lot? I am just sort of curious where people stand on that relative to COP26 and our leadership and, you know, getting the planet to a place where we need to get it.

Mr. MEYER. Let me start because I spoke to that in my testimony. I am sure others will chime in. It is essential that the U.S. does what it says, that we walk the talk and that we show we are going to do everything we can to reach the 50 to 52 percent reduction target that President Biden announced in April at the leaders' summit he hosted.

That is the most effective strategy, frankly, to put pressure on China and other countries who are questioning our political will and whether we stand behind what we put forward in the global community. So, I certainly hope that we will show—be able to show in Glasgow that we are making progress in that direction.

Obviously, what Congress does is essential, but the administration has a number of other tools in its toolbox in terms of financial standards, regulations, loan guarantees at the Department of Energy, working with the growing number of states and governors and mayors and business leaders and investors who have demonstrated that they really want to take the lead in the world economy on clean energy deployment. They have set goals of net zero, 100 percent renewables. We can do a lot more to collaborate with them and encourage more to join them in this drive for climate survival.

Ms. BROWNLEY. Well, I can assure you that that is exactly what the President told us this morning, so you and he are on the same page on that.

Any other comments from the panelists? Ms. McKenna.

Oh, I apologize, yes, please.

Ms. FRANSEN. Was that for me?

Ms. BROWNLEY. Yes.

Ms. FRANSEN. Okay. Thank you. I would echo everything that Mr. Meyer just said. I think the international community is well aware of the importance of this legislation and the U.S. delivering on its commitment to reduce emissions by 50 to 52 percent.

And I have heard members of this committee talking about whether we can trust China on this issue. I should underscore that China is on track to deliver its existing pledges, which is not some-

thing that the United States can yet say. And moreover, the United States has a history of reneging on its international climate commitments, unfortunately, having pulled out of the Kyoto Protocol and subsequently the Paris Agreement. So we need to do a lot to restore trust, and this legislation is a big part of that. Thank you.

Ms. BROWNLEY. Thank you. And with that, Madam Chair, I yield back.

Ms. CASTOR. Thank you very much.

Mr. Gonzalez, you are recognized for 5 minutes.

Mr. GONZALEZ. Thank you, Madam Chair.

I want to quickly mention that China has no binding commitment to meet any target, so it is easy to meet something that you don't have a binding commitment to achieve.

That said, there is a suggestion today that it is a lack of will, or somehow a lack of ambition that prevents climate action. My view is it is a lack of realism in many respects with respect to the tradeoffs that different countries are going to have to make, certainly a lack of global coordination, and also a lack of appropriate technology.

The developed nations, notably Germany, that have moved sort of full on into solar and wind, have the highest rates in the developed world, certainly in Europe, and have not achieved their climate targets. A lot of that has to do with the fact they keep shutting down nuclear plants, which makes no sense to me, and the backup generation is coal. Another fact or projection, roughly 75 percent of all births globally over the next 50 years will occur in Africa. Those are fossil-based economies today.

Mr. Hernick, I want to start with you, because I think you have the key line in your testimony, which is "low-cost, low-emissions technologies and goods will be critical to successful climate policy. Anything short of widespread adoption will fail to address this global issue."

So as you look at a world where 75 percent of births will take place in a continent that is largely driven by fossil, how do we get to our targets if not through low-cost technologies?

Mr. HERNICK. Thank you for the question, Congressman. And in my time in Africa—when I read the editorial, the article, from the President of Uganda——

Mr. GONZALEZ. That was powerful.

Mr. HERNICK [continuing]. That Congresswoman Miller presented, it is very powerful. And I think that we have to remember, and I say this as an environmentalist, that there is no greater threat to the environment than poverty. Because if folks are in a position where they need to choose for their family to heat their home and use a fossil fuel, use hydropower, use solar power or go out and cut down a tree and deforest, they will go out and cut down the tree and deforest. And I think that that is a major challenge that you are seeing across the continent, widespread deforestation which makes it actually more difficult to adapt to a changing environment.

So we need all-of-the-above resources available to countries, and that will include opportunities to retrofit their coal-fired power plants, use not just carbon capture, utilization, and storage, but other innovative technologies that do allow fuel switching from coal

to—I met with a company called Easy Energy Systems. They are based out of Iowa. And they provide a technology where you can supplement the fuel that goes into a coal-fired power plant and reduce emissions dramatically. That is a cool technology. If we are not developing that here, it won't be available in Africa.

Mr. GONZALEZ. Thank you.

Ms. Fransen, in your testimony, you advocated for more investment in clean technology and a reduction in the rate of deforestation by 70 percent. I mentioned in our hearing last week that I have significant concerns about biodiversity and deforestation associated with solar and wind.

A study conducted in California that was published in the National Academy of Sciences found that the deployment of solar panels can exacerbate habitat fragmentation—that is obvious—result in direct and indirect ecological consequences.

And another study led by Clark University found that forest removal in New England and New York for the construction of solar farms has driven up carbon emissions—driven up carbon emissions—releasing close to 5 million metric tons of carbon annually in recent years.

These sorts of things are common sense. When you destroy forests and natural habitats, you emit carbon, lose carbon storage, and disrupt sensitive ecosystems. How do we strike the right balance between ecological concerns and climate concerns when it comes to massive amount of land needed for solar and wind?

Ms. FRANSEN. Thank you for the question. Before I address it, I want to note that China and the U.S. have exactly the same amount of legal bindingness in their targets under the Paris Agreement. That is a feature that the U.S. negotiated very hard for.

Moving on to your question, I think fortunately, it is not necessary to destroy forests and biodiversity to deploy solar and wind energy. I spoke earlier about how farmers are benefiting from payments to put wind turbines on their land, and that is helping them economically without destroying any forests.

We have many options to deploy solar, for example, on roof tops, in urban areas, and in less ecologically sensitive areas. So, of course, we need to do it intelligently, and, of course, there need to put safeguards in place for biodiversity, but I think those two things can easily go hand in hand. Thank you.

Mr. GONZALEZ. If you project how much solar is required to hit some of these targets and you just look at how—where you will have to deploy it, I think reasonableness would suggest that that is not true, but I will yield back.

Ms. CASTOR. Next up, Congressman Casten, you are recognized for 5 minutes.

Mr. CASTEN. Thank you, Madam Chair.

And thank you to our witnesses.

I want to just make a comment. My friend from Ohio just made the point that China has no binding commitments, and it is true. None of us do. The way that Paris was structured was to have voluntary, non-binding commitments to create a framework for all of us to try to build to something more permanent. We are uniquely the only country that looked at voluntary nonbinding commitments and decided that was too hard, and so Trump pulled out.

Now, I share that because when we were in Madrid, shortly after being pulled out, many of us on this committee, one of the Europeans pulled me aside and he said, I just want to let you know that bad things happen when the United States doesn't lead.

And that is the moment that we are in by conscious choice by the former President, and, frankly, by conscious choice of 40 years of policy where our story to the world has been, let me tell you about the complexities of the U.S. Senate. That is on all of us.

For us to lead, we need to have the economic muscle to do that; check, we have got it. We need to be the leading advocate in the world for equity and equality and democracy; check, we have got that box. And then we need to show that we have actions to match our words, and we have failed at that for 40 years.

Now, I share that background because we have had those two of the three. There are other countries in the world that have at least one of those and are trying to come up with two, but they can't match our commitment to democracy.

And, Mr. Meyer, you have been at this as long as anybody, certainly on the panel, maybe as long as anybody in this room. As I look back over history, the last time that the United States actually led and had all three of those was when the Montreal Protocol was structured, I would point out, under the Reagan and first Bush White House.

I wonder if you could just share your wisdom of what we did right when we put that together, and what we are missing in the current political zeitgeist in America to do what we did before when we did—we did fix a problem, right? What can you share with us?

Mr. MEYER. Thank you, Congressman. Let me first try to clarify this issue of bindingness. The Paris Agreement is binding on all countries to put forward what are called Nationally Determined Contributions, so it is bottom up. Each country decides what they can do and they commit to do it. And it is binding in every country to report on how well they are doing in meeting those commitments.

It is not binding on all countries to meet those commitments because of the United States Senate. Because if the agreement had required each country to meet those commitments, it would require it submitting it to the Senate for ratification and President Obama knew there were not 67 votes in the Senate to ratify. So the reason it is not binding to meet the commitments is because of the United States.

On the Montreal Protocol, that is a success story. It really has worked very well, and it was driven by science, including by Maggie Thatcher, who was the conservative Prime Minister of England at the time, the United Kingdom, and she persuaded President Reagan to support negotiation of the Montreal Protocol.

That being said, it is a much easier problem to solve because it deals with a much smaller set of economic actors, and those economic actors realized two things: One, they could make a lot of money by producing the alternatives to the substances that were destroying the stratospheric ozone layer; and two, if their products did destroy the stratospheric ozone layer, they could be on the hook for a lot of lawsuits and a lot of liability and compensation.

So we were able to work with business, with other countries to get that in place. It is a good model, but it is not entirely analogous because of the differences. We have to mobilize action across every sector of the economy. Every major country needs to participate. And, as we have heard, it is a much tougher problem than the ozone layer.

Mr. CASTEN. Right. And I am close to time. I guess I would just offer that the—and I agree with all those points, but a lot of that framework was then adopted into the 1990 amendments to the Clean Air Act, which we did for acid rain, which had a different set of economics. But we have shown with U.S. leadership that we can create a cap-and-trade model to monetize the reduction—

With the time I have got left, Ms. Fransen, committing to clean energy is converting to clean—to cheap energy. So much of what we are trying to do in the Build Back Better is to make sure that we deploy the capital so that people can benefit from cheap energy, and whether that is building EV charging stations or tax credits, we have at least thought about how to do that in the United States.

If you have a solar panel on your roof, you don't pay for electricity anymore. It is pretty awesome. If you have an electric vehicle, you don't pay for gasoline anymore. It is pretty awesome. Everybody who tells you that we can't afford to do this, basically would fail a freshman capital budgeting class, but I digress.

What, Ms. Fransen, should we be thinking about internationally to make sure that folks in other countries also have access to those capital deployments so that they can benefit from cheap, clean energy?

Ms. FRANSEN. Thank you. I think, first of all, as has already been underscored, the role of the U.S. in leading on innovation on these technologies to get them to exist in the first place; and second, on deployment, to have economies of scale bring cost down is fundamentally critical.

So I would start there. And beyond that, I think the kind of support for countries, especially poor countries, a number of folks have experienced in Africa and in much less developed countries, support for those countries in the form of climate finance is also a critical part of the equation. Thank you.

Mr. CASTEN. Thank you.

And thank you, Madam Chair, for allowing me to go a little over. I yield back.

Ms. CASTOR. Next up, Representative Palmer, you are recognized for 5 minutes.

Mr. PALMER. I thank the chairman and the witnesses for being here.

And I want to thank my colleague from California for acknowledging publicly what we have known all along, that this legislation is being developed behind closed doors with zero input from Republicans, which is hardly the way to address major issues.

I also want to commend Mr. Meyer for the work his organization has done in regard to an issue that is kind of the ugly truth behind the climate, the push for renewables, and that is your organization acknowledged that there is 9,700 excess deaths in the U.K. because of energy poverty.

The prices for household energy has gone up so much in the U.K. that people can't afford to keep their homes adequately heated, and they are dying from cold-related illnesses.

Same thing is true in Scotland. It is interesting that a lot of my colleagues are going to be in Scotland. Maybe they should take some warm blankets with them because they are going to go through the same thing.

And if this bill passes, we are already—without this bill passing, because of the Biden administration's energy policies already, we are anticipating somewhere in the range of a 40 percent increase in household utility cost. That is going to really be problematic for people in some of the states like New York and Pennsylvania and New Jersey and Michigan, and particularly problematic for elderly people, because many of these people are on fixed incomes. They are going to have to make decisions about how much they can spend on their utilities to keep their homes adequately warm versus what they can spend on their food, which the food prices are going through the roof, what they can spend on the medicines that they need.

And we have already seen Democrat policies in other states in regard to the elderly and COVID and the thousands of people who have died because of their policies in nursing homes. I just think the American people need to wake up and see what is happening here.

I also have some real issues with this discussion about China. China said their target is to stop increasing emissions by 2030, to stop increasing emissions. They are going to continue to increase emissions until 2030, and frankly the entire Chinese culture is built on deception, so I don't believe for a minute that they are going to stop it, because their objective is not to save the planet, it is to rule the planet.

So all of you sitting at that table are living in a strange world. I just am taken aback by the science. You keep talking about the science and try to say that the science is settled. Well, the only science that is settled is the political science on your side.

You talked about 2.7 degree Celsius increase in climate. Even your own—the people who talk about greenhouse gases increasing the climate admitted that 2.7 degrees will have a negligible impact on the planet. It may actually increase economic development. It will increase food production.

And then for those of you who are talking about food, the World Bank put out a report when the big push was for biofuels. Mr. Hernick, you may recall this. That report was suppressed because what they found that it increased food prices globally by about 75 percent, and it forced 100 million people into poverty, and probably, I want to say, in the 40 million range into food poverty, into hunger.

You have got, I want to say, four, five times the number of people living in developing countries as live in developed countries. And you want to deny them access to natural resources, like natural gas, that could pull those people out of poverty. The World Bank has said that there are more people dying from indoor pollution than from anything related to the climate. So you are condemning people to poverty, you are condemning people potentially to shorter

life spans because of these policies. I think you need to think about this.

And you talk about jobs. We had a meeting with the Vice President of the European Union who admitted to us that the people who lost their jobs in the fossil fuel industry did not get new jobs. They are now having to live on their Social Security. And there is a Spanish study that showed that for every renewable job created, they lost 2.2 jobs. Those are some things that I think need to be on the table.

With that, Madam Chairman, I yield back.

Ms. CASTOR. Next up, Representative Crenshaw, welcome. You are recognized for 5 minutes.

Mr. CRENSHAW. Thank you, Madam Chair. Thank you for holding this hearing.

Thank you, to all the witnesses, for being here.

Ms. Fransen, I would like to start with you. You pointed to China as a leader in renewable energy investment. They have also asked that we help fund their transition to green energy. My question is, should we do that?

Ms. FRANSEN. Thank you. China has been supportive of the U.S. providing international climate finance in accordance with our commitment under the Paris Agreement. That funding is particularly necessary for vulnerable and poor countries, for a combination of mitigation and increasingly——

Mr. CRENSHAW. I understand that it may be necessary for a combination of poor countries, but would it be necessary for China? It is not a trick question.

Ms. FRANSEN. Well, we need to continue providing that finance and increase that finance in accordance with our obligation under the Paris Agreement.

Mr. CRENSHAW. Sure. Well, I hope China is never a recipient of that. I mean, you have mentioned them multiple times as a leader in renewable energy, saying multiple times that they have invested at least double the amount the U.S. has in renewable investments. If you are impressed by that, you will be very impressed with what they have invested in coal.

In 2020, China built three times more new coal capacity than the entire world combined, that's the equivalent of one new large coal plant per week, and that is on top of the 73 gigawatts of new coal capacity that is planned but not completed yet. So they are not going to COP26, and they should not be hailed as some leader in climate policy.

Ms. Fransen, changing the subject, you mentioned in your testimony that the United States needs to drastically reduce the rate of deforestation. Really no disagreement there. I am not so sure that we have a high rate of deforestation. You didn't cite where you got that number, but that is not important. I think we all want net more trees, so let's agree on that.

But what we might not agree on is who we should be hailing as leaders throughout the world. Many of the countries you mentioned as leaders in the climate space, they burn trees for electricity in order to meet their climate goals.

The EU uses biofuels for 45 percent of its, quote/unquote, "renewable mix." Do you think United States should follow suit? Do

you think we should be speaking out against these countries that use wood burning as a way to make their renewable energy mix sound better?

Ms. FRANSEN. Yeah. Thank you for raising that. There are certainly problematic uses of biofuels throughout the world. Not all biofuels are sustainable, and not all forms of biofuels can be a robust part of our climate change solution, and that is why we need to be investing in other forms of clean renewable energy, like wind and solar.

We also need to bear in mind that biofuel production can come into competition with conserving forests for carbon sequestration and biodiversity, and that is the form of biofuels that we need to avoid. So absolutely, we should call that out.

Mr. CRENSHAW. Good. I am glad to hear that. I would also note that $CO_2$ emissions for wood burning are two and a half times higher than natural gas. We should not be clapping our hands for our European partners that like to burn biofuels instead of just going to clean natural gas that is produced in the U.S.

I would also note that natural gas produced by the United States is 41 percent less emissions on a life cycle basis than gas produced in Russia. And yet, our administration plus the Europeans are doing everything they can to rely on Russian natural gas instead. I find that to be very frustrating.

Another frustration I might have is—I have many—we have countries like Uganda that are begging for more natural gas. They are telling the Western world that they won't be trapped in this generational poverty because of the left's obsession with only solar and wind solutions.

There is a company in my district that is trying to build an LNG import terminal in Vietnam. The LNG terminal would allow them to wean off of Chinese coal, which is three times the emissions profile of U.S. natural gas. And in Vietnam, their population density is 800 people per square mile.

So a solar farm displaces quite a few people. It is not really feasible for them. So they are asking for cleaner energy that actually works for them. Wind doesn't work for them because offshore is closer to Chinese waters. And yet, the Biden administration is refusing to permit this, is refusing to allow this because our policy is not to help fund any kind of projects, fossil fuel projects, abroad. But, of course, this is just going to lead to higher emissions. Much like many of these policies will end up net leading to higher emissions.

It is worth noting that if all OECD countries right now stopped burning fossil fuel, stopped emitting any carbon dioxide whatsoever, all of them, right now, for the next 100 years, we would only reduce the temperature by 2100, by 0.8 degrees Fahrenheit. That is quite a huge cost for almost no benefit whatsoever.

I only point that out to get us back to some kind of rational thinking when it comes to a cost-benefit analysis and how we might look for better solutions that reduce emissions, because I think we all have the same goal there, but do so in a more pragmatic way.

Thank you. I yield back.

Ms. CASTOR. Well, I want to thank our witnesses for your testimony today. Your testimony comes at a vital moment for Americans and the human race, frankly.

Congress is poised to act on the historic Build Back Better infrastructure and clean energy package. That is good news for American families because it is going to lower costs, provide cleaner air, and good-paying jobs across the economy. And we know that Americans are awake like never before to the rising costs and the impacts of the climate crisis. Just take a look at what we are shelling out for catastrophic weather events now that are escalating. We have got to get a handle on this.

Americans want action, and with American leadership will come global action that we need desperately before—and we have to act before—because temperatures are continuing to rise and it is going to get worse unless we all act. So we are going to march together to Glasgow, and do everything we can to help President Biden achieve our goals and press the rest of the world to do so as well.

So without objection, I would like to enter into the record at this time an October 2021 report from the World Resources Institute titled, "The State of Climate 2021"; the executive summary of an October 2021 report from the United Nations Environment Programme titled, "The Heat Is On: A World of Climate Promises Not Yet Delivered," which provides an overview of the difference between where greenhouse gas emissions are predicted to be in 2030 and where they should be to avert the worst impacts of climate change; three, a September 2021 report from the Organization for Economic Cooperation and Development titled, "Climate Finance Provided and Mobilized by Developed Countries," which examines the gap between adaptation financing that has been provided and what is needed; and, finally, a September 17, 2021, letter from the Industrial Energy Consumers of America, because, of course, exporting oil and methane has repercussions for the U.S. economy.

So this letter to Department of Energy Secretary Granholm asked the DOD to take action to prevent a U.S. methane supply crunch that would harm consumers. The letter notes that low-storage levels are the result of higher-year, over-year exports. Without objection, those will be entered into the record.

[The information follows:]

**Submissions for the Record**

**Representative Kathy Castor**
**Select Committee on the Climate Crisis**

**October 28, 2021**

ATTACHMENT: Boehm, S., K. Lebling, K. Levin, H. Fekete, J. Jaeger, R. Waite, A. Nilsson, J. Thwaites, R. Wilson, A. Geiges, C. Schumer, M. Dennis, K. Ross, S. Castellanos, R. Shrestha, N. Singh, M. Weisse, L. Lazer, L. Jeffery, L. Freehafer, E. Gray, L. Zhou, M. Gidden, and M. Gavin. 2021. *State of Climate Action 2021: Systems Transformations Required to Limit Global Warming to 1.5°C.* Washington, DC: World Resources Institute.

The report is retained in the committee files and available at: https://doi.org/10.46830/wrirpt.21.00048

ATTACHMENT: United Nations Environment Programme (2021). *Emissions Gap Report 2021: The Heat Is On—A World of Climate Promises Not Yet Delivered—Executive Summary.* Nairobi.

The report is retained in the committee files and available at: https://wedocs.unep.org/bitstream/handle/20.500.11822/36991/EGR21_ESEN.pdf

ATTACHMENT: OECD (2021), *Climate Finance Provided and Mobilised by Developed Countries: Aggregate Trends Updated with 2019 Data,* Climate Finance and the USD 100 Billion Goal, OECD Publishing, Paris.

The report is retained in the committee files and available at: https://doi.org/10.1787/03590fb7-en

ATTACHMENT: Letter to Secretary Granholm from IECA re: "Requir[ing] LNG Terminals to Reduce Export Rates to Fill Winter Natural Gas Storage, Establish LNG Export Volume Limits, and Put Public Interest Safeguards in Place." (2021, Sept. 17).

The letter is retained in the committee files and available at: https://www.ieca-us.com/wp-content/uploads/09.17.21_LNG-Letter-to-Secretary-Granholm-2.pdf?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axiosgenerate&stream=top

Ms. CASTOR. I thank you again for attending our hearing. On to Glasgow. The hearing is adjourned.

[Whereupon, at 12:06 p.m., the committee was adjourned.]

**United States House of Representatives**
**Select Committee on the Climate Crisis**

**Hearing on October 28, 2021**
**"International Climate Challenges and Opportunities"**

**Questions for the Record**

**Taryn Fransen**
**Senior Fellow**
**World Resources Institute**

THE HONORABLE KATHY CASTOR

**1. We know that cutting methane emissions is a key way to slow global temperature rise and very often a win-win-win for industry, the climate, and our health. What specific opportunities does the United States have to lead on reducing methane emissions, and how would that benefit the climate?**

Methane is 86 times more potent than carbon dioxide over a 20-year period, so reducing methane is a very powerful tool to reduce near-term warming. The major sources of anthropogenic methane emissions are agriculture (farming and livestock), the energy sector (emissions from the production, transportation, and use natural gas, oil, and coal), and the decay of organic waste in municipal solid waste landfills and wastewater handling and treatment facilities. As one of the world's largest oil and gas producers, the US has both the responsibility and the opportunity to take action on methane.[1]

In the near term, the US can build on recent progress by addressing three critical priorities:

- Implementing the Methane Emissions Reduction Action Plan, including implementing the EPA's proposed rule for oil and gas facilities, addressing emissions from orphan wells and abandoned mines, and reducing emissions from landfills and agriculture
- Passing key provisions in the Build Back Better Act, including a methane fee, funding for methane monitoring and mitigation, and support for agricultural methane management
- Continuing to support global methane reduction efforts under the Global Methane Pledge

These three priorities would build on recent progress in the following areas:

**Global Methane Pledge:** Internationally, in September, the US and the EU launched the Global Methane Pledge, an international pledge with a collective aspiration to cut global methane emissions by 30% by 2030, relative to 2020. More than 100 countries have already joined the pledge.[2]

[1] Ross, Waskow, and Ge, "How Methane Emissions Contribute to Climate Change"
[2] Climate & Clean Air Coalition Secretariat, "Global Methane Pledge"

**Methane Emissions Reduction Action Plan:** Domestically, the White House released a U.S. Methane Emissions Reduction Action Plan in November, a comprehensive plan to address methane emissions from all major sources.[3]

**Agriculture:** The U.S. Department of Agriculture is working with U.S. farmers and ranchers to expand the voluntary adoption of climate-smart agriculture practices to reduce methane emissions from key agriculture sources. These practices include incentivizing the deployment of improved manure management systems, anaerobic digesters, and new livestock feeds, composting, among others.[4] The U.S. Congress is also considering supplemental funding that would support many of these efforts, including agriculture conversation investments in the House-passed Build Back Better Act.[5]

**Waste:** The Environmental Protection Agency (EPA) has taken steps to implement stronger pollution standards for landfills, including installing systems to capture methane and generate electricity.[6] Under the new U.S Action Plan, the EPA is boosting its voluntary landfill methane outreach program to achieve a national goal of 70 percent methane emissions capture for all landfills around the country.[7] The EPA is also ramping up an initiative to reduce the food loss and waste, which is a major contributor to landfill methane emissions.[8]

**Energy:** The EPA has proposed a new rule to reduce methane emissions from oil and gas production. The proposed rule includes standards for performance, standards to eliminate venting, and monitoring to identify methane leaks.[9] The proposal covers not just new but also existing operations, which will mean more rapid emission reductions. According to the EPA, the proposed regulations will reduce methane emissions from sources covered in the proposal by 74 percent by 2030, relative to 2005 levels.[10] Further, the Department of Transportation in the process of finalizing rules that will extend federal pipeline safety standards and requires operators to cut methane leaks.[11] The Infrastructure Investments and Jobs Act significantly increases federal resources to address methane emissions from abandoned mines and orphaned oil and gas wells.[12] In addition, the House included a methane fee and funding for methane monitoring and mitigation in its passage of the Build Back Better Act. If enacted into law, the fee would provide incentives to further reduce methane emissions.

The Methane Emissions Reduction Action Plan and proposed EPA rules are first steps in achieving serious cuts from methane emissions in the U.S.

Further progress is also possible in the following areas:

A recent study suggests that oil and gas methane emissions can be cut even further through more frequent inspections, greatly reduced venting and flaring at wellheads, and improvements to oil storage tanks, among other measures.[13] Many of these measures have now been put forth in EPA's latest proposed rule for new and existing sources, and the administration and congress should continue to support rapid and comprehensive reductions through complementary measures such as investment in RD&D, regulation of facilities located on federal lands, investment in plugging and remediation of abandoned sites, and partnership with industry to ensure rapid best practice adoption. New sensors and emerging monitoring technologies (for example, plane-mounted sensors and satellites) will also open up opportunities for more advanced leak detection and repair provide granular data to reveal the leakiest parts of the oil and gas system, to support quicker seals and remedial action.

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[3] White House, "U.S. Methane Emissions Reduction Plan"

[4] White House, "Joint US–EU Press Release on the Global Methane Pledge"

[5] White House, "Joint US–EU Press Release on the Global Methane Pledge"; Yarmouth, "H.R. To Provide for Reconciliation Pursuant to Title II of S. Con. Res. 14"

[6] U.S. Environmental Protection Agency, "Benefits of Landfill Gas Energy Projects"

[7] White House, "Fact Sheet: President Biden Tackles Methane Emissions, Spurs Innovations, and Supports Sustainable Agriculture to Build a Clean Energy Economy and Create Jobs"

[8] White House, "Fact Sheet: President Biden Tackles Methane Emissions, Spurs Innovations, and Supports Sustainable Agriculture to Build a Clean Energy Economy and Create Jobs"

[9] U.S. Environmental Protection Agency, "U.S. to Sharply Cut Methane Pollution that Threatens the Climate and Public Health"

[10] U.S. Environmental Protection Agency, "U.S. to Sharply Cut Methane Pollution that Threatens the Climate and Public Health"

[11] White House, "Fact Sheet: President Biden Tackles Methane Emissions, Spurs Innovations, and Supports Sustainable Agriculture to Build a Clean Energy Economy and Create Jobs"

[12] White House, "Fact Sheet: President Biden Tackles Methane Emissions, Spurs Innovations, and Supports Sustainable Agriculture to Build a Clean Energy Economy and Create Jobs"

[13] Clean Air Task Force, "Reducing Methane from Oil and Gas"

Further advances can also be made in the agriculture sector. Enteric fermentation (cow burps), for example, is one of the largest contributors to methane emissions in the U.S. agriculture sector. Additional investments in RD&D of feed additives (which help to inhibit methane production and improve the productivity of ruminants), are important to scale up work in this area, firstly focused on longer-term trials and safety tests.[14] Improved feeding strategies for livestock will require coordinated activity, so the U.S. government could partner with the private sector to scale up production and distribution of better feeds and conduct innovative marketing campaigns.[15]

**2. Global accountability and transparency are critical for translating climate ambition and pledges into real emissions reductions and progress on adaptation and resilience. How do we keep track of real climate action around the world and how do we know that countries will deliver on their commitments under the Paris Agreement?**

The Paris Agreement has set out a robust transparency framework for the purpose of "building mutual trust and confidence" that each country is implementing and delivering on their commitments. As part of these transparency arrangements, each country will submit a report to the global community every two years, detailing their greenhouse gas emissions, progress made in implementing and achieving their commitments, adaptation efforts and needs, and the financial, technological, and capacity building support they have provided and mobilized (for developed countries) or support received and needed (for developing countries). At COP26 in Glasgow in November 2021, the United States worked diligently with partners to ensure that the information reported under the Paris Agreement would be in presented in a standardized manner so that it is possible to transparently and consistently track climate action and progress on commitments.

The Paris Agreement's transparency framework has also built-in accountability processes, where technical experts ensure that information reported is accurate and follows the latest and best-available science and where countries can ask questions of each other about their progress towards their commitments and to explore the opportunities, challenges, and experiences countries face.

The new rules established under the Paris Agreement, which will take effect by 2024, address weaknesses in the pre-Paris accountability system, including infrequent reporting by some countries and weaker requirements for developing countries than for developed countries. Now, under the Paris Agreement, all countries will be required to report on their progress every two years and do using the same strong standards.

Processes established under the Paris Agreement are critical for the global community to track climate actions, emissions reductions, adaptation efforts, and the support provided for and needed by developing countries for implementing climate actions. These processes will provide regular updates (every two years) on actions in each country and serve as the basis upon which we will know how countries are delivering on their commitments.

**3. How do you see clean technology deployment and innovation benefiting vulnerable communities, and what role do you see for the United States in both supporting deployment and innovation and in making sure developing countries around the world can access cheap clean energy technologies?**

As noted in my testimony, while ambitious near-term actions are possible with existing technologies, further innovation in clean technology can broaden our options for ultimately driving net global emissions down to zero, which we must achieve around mid-century to limit warming to 1.5°C (2.7°F).

Given that climate change disproportionally impacts vulnerable and marginalized communities—including the poor, largely in developing countries—innovation that helps realize ambitious global emissions goals is a critical part of reducing the climate impacts experienced by vulnerable communities and developing countries. Further, technological innovation is important to defining pathways towards low-emission and climate-resilient development throughout the world. Finally, the economic competitiveness, growth, and opportunity creation from clean technology innovation can be a driver of prosperity for developing nations. The deployment of innovative energy solutions can also bring clean energy to disadvantaged groups that generally face greater barriers to accessing these technologies and the benefits they provide.

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[14] Searchinger et al., "Opportunities to Reduce Methane Emissions from Global Agriculture"
[15] Searchinger et al., "Opportunities to Reduce Methane Emissions from Global Agriculture"

The U.S. has an important role to play in innovation, as a nation leading the way on climate-smart technologies the U.S. can support innovation in developing countries through technology transfer, intentional partnership and collaboration, as well as international finance.

**4. What are the critical transitions that we need to make to limit warming to 1.5 degrees C, and what are the economic costs and benefits of making these transitions?**

To limit global temperature rise to 1.5°C above pre-industrial levels, the world must halve global greenhouse gas emissions by 2030 and reach net zero around mid-century. The sooner these emissions peak and the lower they are when they peak, the greater the likelihood of reaching net zero in time. The latest climate science from the IPCC makes clear that achieving these deep emissions reductions will require rapid, far-reaching transitions of unprecedented scale across power, transport, buildings, industry, land use, coastal zone management, and agriculture—as well as the immediate scale-up of carbon removal to compensate for the significant proportion of the carbon budget that we have already spent down and residual emissions that will prove difficult to eliminate entirely.[16]

A recent report from WRI translates these global systemwide transitions into concrete, actionable targets for 2030 and 2050,[17] including:

- **Power**
  - Reduce the carbon intensity of electricity generation to 50–125 gCO2/kWh by 2030 and to below zero in 2050.
  - Increase the share of renewables in electricity generation to 55–90% by 2030 and to 98–100% by 2050.
  - Lower the share of unabated coal in electricity generation to 0–2.5% by 2030 and to 0% by 2050.
- **Buildings**
  - Reduce the carbon intensity of operations in select regions by 45–65% in residential buildings and by 65–75% in commercial buildings by 2030, relative to 2015; reach near zero carbon intensity globally by 2050.
  - Decrease the energy intensity of residential building operations in key countries and regions by 20–30% by 2030 and by 20–60% by 2050, relative to 2015; reduce the energy intensity of commercial building operations in key countries and regions by 10–30% by 2030 and by 15–50% by 2050, relative to 2015.
  - Increase buildings' retrofitting rate to 2.5–3.5% annually by 2030 and to 3.5% annually by 2040; ensure that all buildings are well insulated and fitted with zero-carbon technologies by 2050.
- **Industry**
  - Increase the share of electricity in the industry sector's final energy demand to 35% by 2030, 40–45% by 2040, and 50–55% by 2050.
  - Reduce global cement production's carbon intensity by 40% by 2030 and by 85–91% by 2050, relative to 2015.
  - Reduce global steel production's carbon intensity by 25–30% by 2030 and by 93–100% by 2050, relative to 2015.
  - Build and operate 20 low-carbon commercial steel facilities, with each producing at least 1 Mt annually by 2030; ensure that all steel facilities are net-zero GHG emissions by 2050.
  - Boost green hydrogen production capacity to 0.23–3.5 Mt (25 GW cumulative electrolyzer capacity) by 2026 and to 500–800 Mt (2,630–20,000 GW cumulative electrolyzer capacity) by 2050.
- **Transport**
  - Reduce the percentage of trips made by private LDVs to between 4% to 14% below BAU levels by 2030.
  - Reduce the carbon intensity of land-based passenger transport to 35–60 gCO2/pkm by 2030 and reach near zero by 2050.
  - Increase the share of EVs to 75–95% of total annual LDV sales by 2030 and to 100% by 2035.
  - Expand the share of EVs to account for 20–40% of total LDV fleet by 2030 and 85–100% by 2050.

[16] IPCC, "Global Warming of 1.5°C"
[17] Boehm et al., "State of Climate Action 2021"

- Boost the share of BEVs and FCEVs to reach 75% of annual global bus sales by 2025 and to reach 100% of annual bus sales in leading markets by 2030.
- Increase the share of BEVs and FCEVs to 8% of global annual MHDV sales by 2025 and to 100% in leading markets by 2040.
- Raise the share of low-emissions fuels in the transport sector to 15% by 2030 and to 70–95% by 2050.
- Increase SAF's share of global aviation fuel supply to 10% by 2030 and to 100% by 2050.
- Raise ZEF's share of international shipping fuel to 5% by 2030 and to 100% by 2050.

- **Technological Carbon Removal**
  - Scale up technological carbon removal to 75 MtCO2 annually by 2030 and to 4.5 GtCO2 annually by 2050.

- **Land-Use and Coastal Zone Management**
  - Reduce the rate of deforestation by 70% by 2030 and by 95% by 2050, relative to 2018.
  - Reforest 259 Mha of land by 2030 and 678 Mha in total by 2050, relative to 2018. WRI
  - Remove 3.0 GtCO2 annually through reforestation by 2030 and 7.8 GtCO2 annually by 2050.
  - Reduce the degradation and destruction of peatlands by 70% by 2030 and by 95% by 2050, relative to 2018.
  - Restore 22 Mha of peatlands by 2030 and 46 Mha in total by 2050, relative to 2018.
  - Reduce the conversion of coastal wetlands by 70% by 2030 and by 95% by 2050, relative to 2018.
  - Restore 7 Mha of coastal wetlands by 2030 and 29 Mha in total by 2050, relative to 2018.

- **Agriculture**
  - Reduce agricultural production emissions by 22% by 2030 and by 39% by 2050, relative to 2017.
  - Increase crop yields by 18% by 2030 and by 45% by 2050, relative to 2017.
  - Increase ruminant meat productivity per hectare by 27% by 2030 and by 58% by 2050, relative to 2017.
  - Reduce share of food loss by 50% by 2030 and maintain this reduction through 2050, relative to 2016.
  - Reduce per capita food waste by 50% by 2030 and maintain this reduction through 2050, relative to 2019.
  - Reduce ruminant meat consumption in high-consuming regions to 79 kcal/capita/day by 2030 and to 60 kcal/capita/day by 2050.

Unfortunately, we do not have the luxury of picking and choosing among these targets—all must be achieved if we are to avoid the worst climate impacts. But the good news is that the benefits of climate action are enormous. A 2018 report from the Global Commission on the Economy and Climate, for example, estimates that, when compared to a business-as-usual scenario, ambitious climate action across these systems could generate $26 trillion in direct economic gains through 2030, as well as create 65 million additional low-carbon jobs in 2030 (NCE 2018). In the United States alone, Energy Innovation finds that a 1.5°C pathway could increase national GDP by $489 billion per year in 2030 and reach $997 billion in 2050 (a 2.6 percent annual GDP expansion).[18] And due to limitations in economic modeling, these estimates are likely conservative—they underestimate the benefits of climate action. Traditional economic models do not adequately account for the damage that climate change risks, which vary significantly in scale and nature, can wreak on the economy, nor do they reflect the full benefits of curbing greenhouse gas emissions, especially those related to improved air quality and health (NCE 2018).[19]

Financing these transitions globally, however, will require up-front investments that reach $5 trillion per year by 2030, with a public climate finance contributing roughly a quarter—or $1.25 trillion per year—of this total (Boehm et al. 2021). But it's clear that that such investments make good economic sense, and the costs of inaction are far outweighed by the risk posed by climate change.

[18] Orvis, "A 1.5 Celsius Pathway to Climate Leadership for The United States"

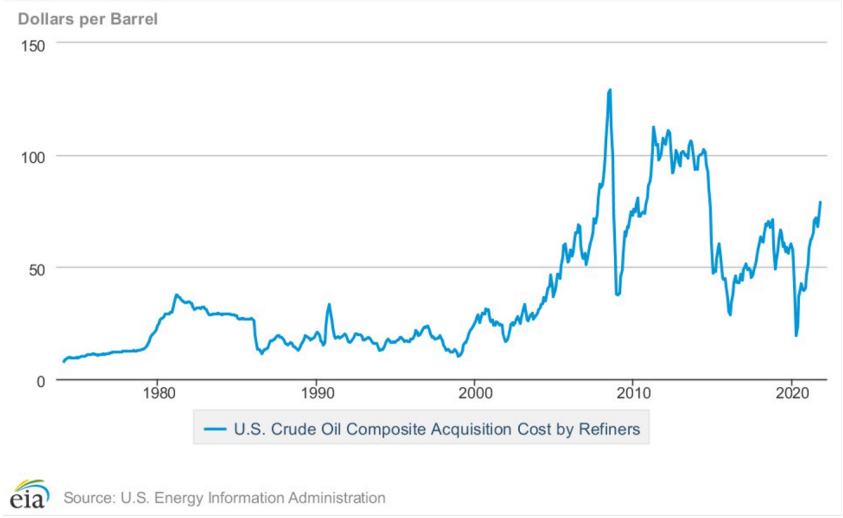
[19] Saha and Jaeger, "America's New Climate Economy: A Comprehensive Guide to the Economic Benefits of Climate Policy in the United States"

The U.S. is responsible for more cumulative carbon emissions than any other country, and it is also the world's largest economy. The U.S. can and must invest in transitions at home and abroad. Domestically, the U.S. needs live up to its commitment to halve emissions by 2030, and that means that congressional action, particularly passing the Build Back Better Act, is essential.[20] However, these required transformations are global, and domestic emission reductions along are not enough. Congress can enable the U.S. to lead on climate action globally by maintaining and increasing international funding for climate priorities like clean energy, resilience, and forest protection.[21] Finally, as leader in innovation, with congressional support, the U.S. can lead the research and development needed to fully decarbonize the economy.

**5. To what extent have President Biden's policies affected energy prices in global energy markets and here in the United States?**

Fossil fuel prices are volatile by nature. Over the past 15 years, we have seen 3 major spikes and 3 troughs in the price of oil—two caused by major global economic recessions (in 2008 and 2020), and one extended period of volatility from 2014–2017 caused by increased global supplies and OPEC production decisions (Figure 1). Price spikes often follow price troughs as periods of low prices discourage investment in production. Price spikes like the one we have seen in recent months have happened before and will happen again until the world transitions to clean energy and boosts the resilience of its energy systems.

**Figure 1 | US Crude Oil Composite Acquisition Cost by Refiners**




*Source: Energy Information Administration, "U.S. Crude Oil Composite Acquisition Cost by Refiners (Dollars per Barrel)"*

Understanding the impact of COVID–19 on domestic oil production requires understanding the investment cycles within the industry. In the years prior to 2020, low prices led to low investment in the sector and hesitancy to underwrite the large amounts of debt that more expensive shale production requires, particularly following the 2014–2017 trough, when the price of oil fell 70% over a year and a half due to a supply glut resulting from OPEC attempts to undercut US shale oil production.[22] During 2020, US petroleum demand recorded its largest annual decrease as consumption decreased to a 25-year low due to the pandemic.[23] When demand

[20] Kennedy et al, "Blueprint 2030: An All-In Climate Strategy for Faster, More Durable Emissions Reduction"; Larsen et al, "Pathways to Paris: A Policy Assessment of the 2030 US Climate Target"
[21] Thwaites, "4 Climate Finance Priorities for the Biden Administration"
[22] Stocker, Baffes, And Vorisek, "What triggered the oil price plunge of 2014–2016 and why it failed to deliver an economic impetus in eight charts"
[23] Energy Information Administration, "How much oil is consumed in the United States?"

cratered, wells were shut in, rig counts plummeted, and many operators declared bankruptcy.[24] As demand rebounded strongly in 2021, this lower production capacity meant supply has been unable to ramp up again as quickly as needed

President Biden's policies, including revoking a cross-border permit for the Keystone XL pipeline and temporarily pausing new oil and gas leasing, are not responsible for the recent rise in energy prices. The Keystone XL pipeline would have transported an estimated 830,000 barrels of oil per day, compared to US petroleum product consumption of approximately 20 million barrels per day.[25] The Keystone XL pipeline was also less than 10% constructed at the time of President Biden's order and would not have been completed in time to deliver crude oil and affect prices during fall 2021.[26] The President's order to pause new oil and gas leasing was only in effect for 4.5 months, until a judge halted it[27] and more than half of the federal acres already leased are non-producing. Given the small share of production on federal leases and the substantial lag time involved in developing new federal leases into active operating wells, the President's pause on new oil and gas leasing did not substantially impact domestic oil production. In fact, domestic oil production has remained relatively constant since June 2020[28] with the two largest disruptions during this time coming from extreme weather events, namely the February 2021 winter freeze and Hurricane Ida in August 2021.

The current mismatch between energy supply and demand does not indicate we should slow the low-carbon transition—rather, it highlights its urgency. Shifting from gasoline-powered vehicles toward electric vehicles, public transit, and other alternative transportation modes would reduce oil dependence, protecting American consumers from price volatility and reducing reliance on imports. In addition, shifting from natural gas heating and new natural gas plants for electricity generation would also reduce volatility. The US homes that are heated primarily with natural gas are expected to have heating bills 30% higher than normal this winter, in contrast to only 6% higher for homes heated primarily with electricity.[29] According to the IEA, if the world invests enough in clean energy, average household energy bills in developed economies will be lower in 2030 and 2050 than they are today.[30]

Policies like the recently passed Infrastructure Investment and Jobs Act (IIJA) and the Build Back Better (BBB) legislation currently being debated by US Congress would help achieve this transformation. The BBB legislation would provide incentives to speed development of renewable energy generation, encouraging their development over new natural gas plants. Natural gas already accounts for 40% of electricity generation nationally and is also used extensively for home heating; any increases in reliance on gas would exacerbate future vulnerability to price spikes and supply issues. The IIJA includes substantial investments in electric vehicles, which would reduce reliance on oil, including billions for investments in electric vehicle charging infrastructure and electric buses. The BBB legislation would add additional incentives for other electric vehicles, further reducing reliance on price-volatile oil. Factoring in fuel and maintenance savings, an electric vehicle already costs one-sixth the amount of a gasoline-powered car.[31] Federal investments in these transformative pieces of legislation will extend the lower costs and clean air benefits of electric vehicles to more American households and protect consumers from the volatility and geopolitics of global oil markets.

**6. Some Members of Congress have described the anticipated impacts of 2.7 degrees C warming as "negligible." Can you describe the range of climate impacts the world might experience as a result of 2.7 degrees C warming due to anthropogenic climate change? Would you consider those impacts to be "negligible"?**

To date, global average surface temperature has risen 1.1°C (2.0°F) relative to pre-industrial levels. Current policies are expected to result in warming in the range of 2.7°C (4.9°F) by 2100. The projected impacts under this level of warming are significant, according to the IPCC AR6 WGI report released in August. The report as-

[24] Cromwick and Myers Jaffe, "Energy Price Inflation at Our Doorstep"
[25] Energy Information Administration, "4a. U.S. Petroleum and Other Liquids Supply, Consumption, and Inventories"
[26] Reuters Fact Check, "Fact Check-Though Keystone XL Pipeline had secured most of its funding, it was only 8% constructed"
[27] U.S. Department of the Interior, "Report on the Federal Oil and Gas Leasing Program"
[28] Energy Information Administration, "4a. U.S. Petroleum and Other Liquids Supply, Consumption, and Inventories"
[29] Energy Information Administration, "Winter Fuels Outlook, October 2021"
[30] International Energy Agency. "Prices and affordability—World Energy Outlook 2021"
[31] Gillis, "Investments in clean energy are the ideal response to high fossil fuel costs"

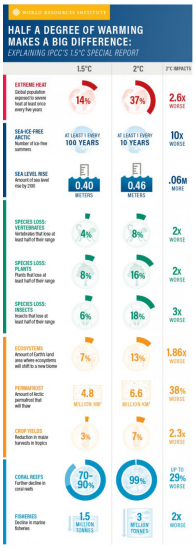
sessed five scenarios for future warming, including one (SSP2–4.5) projected to result in 2.7°C by 2100. The impacts on the water, ocean, and cryosphere system of that scenario include: [32]

> *The Atlantic Meridional Overturning Circulation (AMOC) will very likely decline over the 21st century. . . . There is medium confidence that the decline will not involve an abrupt collapse before 2100.*
>
> *The Arctic Ocean will likely become practically sea ice-free during the seasonal sea ice minimum for the first time before 2050.*
>
> *Both the Greenland Ice Sheet (virtually certain) and the Antarctic Ice Sheet (likely) will continue to lose mass throughout this century. . . . The related contribution to global mean sea level rise until 2100 from the Greenland Ice Sheet will likely be . . . 0.04–0.13 m . . . while the Antarctic Ice Sheet will likely contribute . . . 0.03–0.29 m.*
>
> *Glaciers lost 6200 [4600–7800] Gt of mass (17.1 [12.7–21.5] mm global mean sea level equivalent) over 46 the period 1993 to 2019 and will continue losing mass . . . (very high confidence).*
>
> *It is virtually certain that global mean sea level will continue to rise through 2100, because all assessed contributors to global mean sea level are likely to virtually certain to continue contributing throughout this century.*
>
> *At sustained warming levels between 2°C and 3°C, the Arctic Ocean will be practically sea ice-free throughout September in most years (medium confidence); there is limited evidence that the Greenland and West Antarctic Ice Sheets will be lost almost completely and irreversibly over multiple millennia; both the probability of their complete loss and the rate of mass loss will increase with higher temperatures (high confidence); about 50–60% of current glacier mass outside Antarctica will be lost (low confidence); Northern hemisphere spring snow cover extent will decrease by up to 30% relative to 1995–2014 (medium confidence); permafrost volume in the top 3 m will decrease by up to 75% relative to 1995–2014 (medium confidence). Committed GMSL rise over 2000 years will be about 4–10 m with 3°C of peak warming (medium agreement, limited evidence).*

A forthcoming (February 2022) IPCC report will provide further detail on the impacts of a 2.7°C future on ecosystems, water, food production, cities and infrastructure, health, poverty, and livelihoods. In the meantime, it is instructive to review the projected impacts of 1.5°C and 2°C of warming as a benchmark for 2.7°C (Figure 2).

[32] IPCC, "AR6 Climate Change 2021: The Physical Science Basis," direct quotes

**Figure 2 | 1.5°C versus 2.0°C**




*Source: https://www.wri.org/insights/half-degree-and-world-apart-difference-climate-impacts-between-15c-and-2c-warming*

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**Questions for the Record**

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**Mercy Corps**

THE HONORABLE KATHY CASTOR

**1. You testified that it is very important that the United States meet our international climate finance commitments. How does U.S. climate finance aid help to meet development and humanitarian needs in vulnerable communities, support adaptation, and advance our own national interests?**

The climate crisis is one of the biggest threats facing humanity and jeopardizes the development gains the world has worked so hard for. Confronting climate change is the most pressing issue of our time, and action on global climate adaptation now will drive global climate resilience in the future. U.S. International Climate Finance is crucial to helping meet escalating development and humanitarian needs in vulnerable communities. The climate crisis disproportionately affects the communities Mercy Corps works with: vulnerable communities facing poverty, fragility, conflict and already suffering the devastating impacts of continued environmental degradation. As the largest bilateral assistance donor, the U.S.'s continued commitments to global climate finance will help countries adapt to the devastating impacts of climate change already being felt, like food insecurity, poverty, and drought, and help countries pursue low carbon development pathways to overcome their development challenges.

We are already experiencing the devastating impacts that climate change has on almost every aspect of life—from food and water insecurity to infrastructure and public health. Our research has found that a vast majority of the most climate-vulnerable countries received less than $20 per person per year in climate change adaptation financing from 2010–2017.[1] Through our programming, we have seen how important adapting to climate variability is and how investments in crop and livelihood diversification, seasonal climate forecasting, community-based disaster risk reduction, famine early warning systems, insurance, water storage, supplementary irrigation can mean the difference between success and failure for those dependent on these means to survive. And this crisis is exacerbating inequalities that intersect with gender, race, ethnicity, and economic security.

Climate risks, like climate change, are felt in hyper local contexts and amplified at the global level. According to the October 2021 Climate Risk Analysis by the U.S. Department of Defense, Climate change is "reshaping the geostrategic, operational, and tactical environments with significant implications for U.S. national security and defense. [With the] increasing temperatures; changing precipitation patterns; and more frequent, intense, and unpredictable extreme weather conditions caused by climate change [we have found climate change a force] exacerbating existing

[1] Zurich Flood Resilience Alliance. 2020. At What Cost: How chronic gaps in adaptation finance expose the world's poorest people to climate chaos. http://
www.floodresilience.net/resources/item/at-what-cost-how-chronic-gaps-in-adaptation-finance-expose-the-world-s-poorest-people-to-climate-chaos/

risks and creating new security challenges for U.S. interests."[2] Climate change threatens military installations around the world, increases the number and frequency of missions undertaken at the DoD, compounds the challenges and drivers of climate migration, and exposes U.S. defensive vulnerabilities—all of which could be exploited by and embolden malign actors. It is in America's best interest to avoid the destabilizing effects of climate change and assume the risks associated with increasing climate variability unleashed at home and abroad.

Through the President's Emergency Plan for Adaptation and Resilience (PREPARE), the U.S. intends on adopting a whole-of-government approach to supporting developing countries and communities in vulnerable situations around the world adapt to and manage the impacts of climate change. This response also stresses the importance of centering local communities and empowering local leaders with the power and resources to build resilience to climate change. This initiative also underscores the importance of multi-sectoral adaptation efforts, collaborative action and the need for smart investment that avoids duplication, enhances efficiency, and galvanizes good practice to combat climate change. Mobilized in this manner, U.S. climate finance and the U.S. commitment to supporting developing countries will help to speed up the delivery of global emissions cuts—ultimately leading to less damages, destruction, and destabilization of communities around the globe. The PREPARE Initiative also mobilizes finance and private capital to bridge the global climate financing gap. It aims to accelerate financing of adaptation measures by: contributing to and shaping new and existing multilateral and bilateral adaptation funds, supporting multiple climate risk finance strategies, strengthening capacity to access finance for adaptation and develop bankable investments, and striving to leverage both public finance and private capital.

**2. In your statement, you called for the U.S. government to work with the private sector to support climate adaptation. What can the private sector do to support climate adaptation and resilience in vulnerable communities?**

The standard humanitarian and development tools deployed by wealthy governments and development finance institutions—largely sovereign loans and project contracts or grants—are insufficient in scope and scale to meet the climate change challenge. To reach the level of funding required, it is essential to unlock far greater amounts of private capital and to encourage investments in higher risk environments. Today, private sources represent more than 90 percent of financial flows into emerging markets, and it has been estimated the annual need to respond to the scale and severity of the climate crisis, in green infrastructure and other adaptation and mitigation efforts, is around $5 trillion USD.[3]

Inclusive growth can only be achieved with the private sector to spur greater development and humanitarian impact. There are opportunities for the private sector to invest in adaptation as part of a global green economy. Entrepreneurs are finding ways to help communities cope with the impact of climate change. They now need capital and support to bring their offerings to scale.

Development and business leaders alike recognize that by collaborating and leveraging each other's unique resources, assets, and skill set, we can tackle problems together that neither of us could address alone. There is a $23 trillion global market for climate-smart investments in emerging markets[4] that needs to be utilized to reach our collective climate adaptation and resilience goals. Markets offer vital channels for advancing access to climate-smart and risk-reduction products and services, particularly in contexts with weak public sector services or protracted crises.

Governments can assist with mainstreaming and integrating climate change adaptation into national, sub-national and sector planning and budgeting. This mainstreaming goes hand in hand with financial instruments, procurement policy and access to flexible funding streams—all of which can continue to ensure effective and efficient use of public dollars in assistance. During the annual U.S. Federal budget and appropriations process, for example, Congress can allow for more flexibility in funding within the assistance budget, to allow local actors and development

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[2] Department of Defense, Office of the Undersecretary for Policy (Strategy, Plans, and Capabilities). 2021. Department of Defense Climate Risk Analysis. Report Submitted to the National Security Council.

[3] https://
www.wri.org/insights/low-carbon-growth-26-trillion-opportunity-here-are-4-ways-seize-it

[4] International Finance Corporation. (2016). Climate Investment Opportunities in Emerging Markets: An IFC Analysis. Retrieved from https://www.ifc.org/wps/wcm/connect/59260145-ec2e-40de-97e6-3aa78b82b3c9/3503-IFC-Climate_Investment_Opportunity-Report-Dec-FINAL.pdf?MOD=AJPERES&CVID=lBLd6Xq

agencies to rapidly overcome emerging issues, overcome barriers to entry, de-risk investment and be more adaptive in planning and implementation. Doing this will enable more effective co-creation, innovative financing, and partnerships with a diverse array of actors. This nimbleness can mobilize private businesses around the world to advance our core priorities.

**3. In your testimony you described climate as a threat multiplier. What types of assistance can address this climate-conflict nexus and how the United States could demonstrate leadership here?**

The relationship between climate-related risks and conflict is complex and often intersects with political, social, economic, and demographic factors, amplifying and compounding threats and stressors. Despite the urgent need for more effective responses, funding for climate adaptation rarely makes it outside of capitals, with only approximately 10% of climate finance reaching local levels. Climate change will have the most pronounced consequences in fragile states because those with weak institutions and a history of conflict are ill equipped to effectively respond to the challenge and, ostensibly dealing with compounding crises, they are often passed over for "stabler" places for investment. It is estimated nearly a third of conflicts from 1980–2016 were preceded by climate-related disasters. Research suggests climate-related disasters increase the risk of armed conflict, showing that states with large populations, political exclusion and low levels of human development are particularly vulnerable. Governance challenges in these countries often amplify the negative effects of climate change by undermining institutional capacity, damaging public trust and the strength of social contract, and sustainable development broadly.

As such, strengthening local and state capacity to create an enabling environment for peace and stability and supporting climate resilience is critical. A recent study produced by Mercy Corps implies that the capacity of states to prevent, mitigate and respond effectively to the social and economic challenges brought about by climate change, may determine, in large part, whether violence occurs.[5] U.S. programming should prioritize efforts to identify the knowledge and technical gaps of formal and informal institutions and build capacity to manage natural resources, address tensions and disputes, and respond to disasters effectively. Important to this work will also be establishing or strengthening conflict early warning systems as well as climate and weather information systems (weather, seasonal forecasts, early warning systems) to inform timely and effective local investments,

Relatedly, programming should prioritize helping local government actors and civil society organizations manage use of and competition over natural resources. Developing resource sharing agreements and joint management across administrative boundaries can improve coordination and use, build trust through information sharing, and ultimately reduce resource tensions. Further, working with communities, especially youth, to identify and support alternative economic opportunities can diversify sources of employment. Strengthening and diversifying natural resource-based livelihoods can lower the risk of conflict between groups and allow communities to better cope with climate shocks and stresses, improving food security. Assessing vulnerabilities and risks of food systems and facilitating access to improved technologies, including information services, can help reduce crop loss and improve yields, while facilitating market linkages can increase household income.

**4. How have you seen climate change undermine vulnerable populations, especially with respect to women and girls? How can the United States demonstrate greater leadership to address these impacts and ensure that assistance reaches vulnerable women and girls?**

Women and men are experiencing climate change differently, as gender inequalities persist around the world, affecting the ability of individuals and communities to adapt. It is crucial that our aid recognize and amplify the important contributions of women as decision makers, stakeholders, educators, carers and experts across sectors and underscore the importance, at all levels, of integrating gender concerns and gender equity in policies and programming to ensure successful, long-term solutions to climate change.

We have identified three critical areas for women's participation in building resilience: (1) household decision-making, (2) meaningful participation in community groups, and (3) access to market linkages. Gender inequality, specifically in these

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[5] Jene, Lisa and Beza Tesfaye (2020). Addressing the Climate-Conflict Nexus in Fragile States: Understanding the Role of Governance. Mercy Corps.
https://www.mercycorps.org/sites/default/files/2020-11/Addressing-the-Climate-Conflict-Nexus_Full-Report_11.6.pdf

areas, undermine and limit women's ability to prepare for, respond to and recover from shocks. Mercy Corps' resilience programs, globally programmed in diverse contexts like Nepal, Niger, and Indonesia, are invested in generating knowledge around the intersection of gender and resilience in practice. Advancing women's participation in household decision-making, community organizations, and markets is critical to strengthening their individual resilience and that of their families and communities. Designing programs that effectively reach women and strengthen their resilience capacities requires an in-depth understanding of key gender dynamics in the program setting.

There are three ways the United States can demonstrate leadership in addressing the effects of climate change on women and girls. First, the U.S. can continue to integrate gender into all of the Agency's climate change and development strategies. Second, it can support the advancement of research to increase knowledge around the intersection of gender and climate change. In doing so it should highlight the need to address gender and social nuances in climate change vulnerability assessments, develop related guidance, and create opportunities for women and girls directly affected by climate change to contribute to identifying sustainable solutions. Third, the United States can continue to expand on the development of Climate Change Gender Action Plans (ccGAPs), as piloted by USAID in Peru and Namibia, mainstreaming ccGAPs within all of USAID's Country Development Cooperation Strategies and identifying a climate change policy or strategy guided by gender-specific issues in each priority sector.

**5. Why is it so important to support local actors, local solutions, and the localization of aid when it comes to adaptation and building climate resilience?**

Climate change is both a global and a hyper-local issue. The causes impact everyone at a global level, however efforts and responses are coordinated at and informed by the local level. To tailor climate financing and climate resilient projects in a bespoke way, we must ensure that local leaders and communities are engaged deeply in the design and implementation of climate adaptation plans.

Local communities are on the frontlines of climate change impacts, yet rarely do they and other local actors have a voice in the decisions that most affect them. Their engagement is central to ensuring that climate adaptation efforts are effective. Subnational governments and local stakeholders are key implementers of national policies. Local governments are often the first to respond to localized climate change impacts, and their strong connections to the community and local knowledge mean they are often best placed to recognize the need for adaptation at a local scale. The United States can demonstrate leadership by ensuring that local organizations in developing countries have a seat at the decision-making table and designated leadership roles in U.S. government programs seeking to respond to climate change. Funding to build capacity and transparency can also contribute to enhancing and promoting country ownership and increase sustainability.[6] Reaffirming the USG's commitment to locally owned, locally led, and locally sustained will make assistance better tailored to local political realities, power dynamics and incentive structures.

Multiple U.S. government instruments—including Fixed Amount Reimbursement Agreements (FARA), Public Financial Management Risk Assessment Framework (PFMRAF), and Political Economy Analysis (PEA)—exist to enable the U.S. to invest in accountable local systems, in government, and in civil society while protecting U.S. taxpayer dollars from unnecessary risk.[7] The United States can help to, as USAID Administrator Power mentioned in her "New Vision for Global Development" speech, shift the status quo and center of gravity that seeks to maintain the present development and humanitarian apparatus, and lead the way to help identify new partners, strengthen the pathways for true capacity sharing and establish genuine partnership with local actors. The traditional power dynamics of donor-driven development (and the systemic inequities in place within it) undermine sustainable development. By the United States, the world's largest donor, amplifying

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[6] Somanathan E., T. Sterner, T. Sugiyama, D. Chimanikire, N.K. Dubash, J. Essandoh-Yeddu, S. Fifita, L. Goulder, A. Jaffe, X. Labandeira, S. Managi, C. Mitchell, J.P. Montero, F. Teng, and T. Zylicz, 2014: National and Sub-national Policies and Institutions. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA

[7] T. S. Ahmad. (2015). To Fight Corruption, Localize Aid: How US Foreign Assistance Can Support a Locally Driven Fight Against Corruption. Washington DC: Oxfam America. From https://s3.amazonaws.com/oxfam-us/www/static/media/files/CorruptionFINAL-small.pdf

the local voices of those who too often are left out of decision making and ensuring they have the technical support to co-design, set priorities, drive implementation and evaluate the impact of the programs and define success, the world can unlock untapped potential of millions and fight corruption, strengthen governance and bolster accountability—all of which accelerate and enable effective climate change action.

**6. Clean renewable energy (solar, wind, and small-scale hydropower) is often the cheapest source of electricity for vulnerable communities in African countries. A recent Brookings analysis finds that African countries are leading the world in expanding access to electricity via off-grid solar and storage technologies. Could you please explain how renewable energy provides cleaner and more cost-efficient solutions for vulnerable people and communities in different countries across Africa? Are there examples of communities bypassing polluting fossil fuels altogether and deploying clean and renewable strategies to meet their energy needs?**

Renewable energy and energy efficiency are key to sustainable development, enabling energy access, spurring economic growth, creating employment, and improving health. Today, more than 800 million people lack access to energy globally, 8 in 10 of whom live in "fragile" states where communities also face a myriad of complex challenges related to conflict, weak governance and insecurity, as well as the growing impacts of climate change. Advancements in clean energy generation and storage technologies, plus innovations in off-grid business models have enabled decentralized energy services to leapfrog fossil fuel-based solutions for a growing number of households and communities, particularly in East Africa.[8] Centralized energy sources and usually fossil fuel based energy systems have failed to serve these communities for decades. This leapfrogging has spurred investment in many new companies and can allow for individual households, buildings, and businesses to manage their own energy production and consumption and overcome affordability obstacles for poorer households.

As well as being more effective in reaching these underserved communities, renewable energy solutions have also proved to be more cost effective. Of the wind, solar and other renewables that came on line in 2020, nearly two-thirds—62%—were cheaper than the least expensive new fossil fuel,[9] according to the International Renewable Energy Agency (IRENA). According to a IRENA 2020 report, "Renewable Power Generation Costs in 2020 shows that costs for renewable technologies continued to fall significantly year-on-year. Concentrating solar power fell by 16 per cent, onshore wind by 13 per cent, offshore wind by 9 per cent and solar by 7 per cent. With costs at low levels, renewables increasingly undercut existing fossil fuel-based generation and distribution costs."

To connect the poorest and hardest to reach households, off-grid solutions, including solar lighting, solar home systems, and increasingly mini grids, will be crucial. At Mercy Corps, through our recent merger with Energy for Impact (E4I), we will be able to create and bolster opportunities to increase energy access and use for the communities that need them most, integrate energy into sectors such as agricultural development, economic growth, youth employment, humanitarian recovery and climate resilience and push the frontier on research, development and design.

The U.S.'s Power Africa Initiative, which provides technical support for clean energy procurement and helps mobilize private capital for clean energy projects, should serve as a model for U.S. leadership in the clean energy space and in programming focused on developing clean and renewable strategies to meet energy needs. Through the Power Africa initiative, and others modeled like it, the United States has the comparative advantage of leveraging its convening power to inspire technology-rich, multi-sectoral, multi-regional and cost-optimal global energy transition pathways. Power Africa's enterprise driven approach has motivated the private sector to invest in power generation projects, developed transmission and distribution resources, improved government capacities to manage their power sectors, and ultimately, leveled the playing field for competitive investment.[10]

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[8] Cilliers J. (2021) Technological Innovation and the Power of Leapfrogging. In: The Future of Africa. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-46590-2_10

[9] IRENA (2021), Renewable Power Generation Costs in 2020, International Renewable Energy Agency, Abu Dhabi.

[10] USAID, 2018. *Power Africa 2018: Annual Report.* [Online] Available at: https://www.usaid.gov/sites/default/files/documents/1860/2018-Annual_Report1015_508.pdf. ZLM Project Engineering, The Case for Offshore Energy in KwaZulu-Natal, 26 April 2019, 2018 Draft IRP released by the South African Department of Energy.

**Questions for the Record**

**Alden Meyer**
**Senior Associate**
**E3G**

THE HONORABLE KATHY CASTOR

**1. What does the United States need to do to take a more constructive stance in our engagement with vulnerable communities, particularly those experiencing severe economic losses and environmental damage due to climate impacts?**

Extreme climate-related impacts are already hitting countries earlier and harder than expected, and these will increase significantly in years to come, even if current mitigation targets are met. Whichever metric is used, costs are already substantial, in both economic and human terms, and will only escalate. In 2020 over 30 million people were displaced [1] by weather-related disasters, primarily in Asia, Africa and Central America. Climate-related disasters cost the world $210 billion in 2020 [2] and 85 percent of the global population has been affected by climate-driven extreme weather events.[3] The economic cost of loss and damage in developing countries is estimated to be $290–580 billion by 2030, rising to between $1–1.8 trillion by 2050.[4]

Climate change already poses a risk to sovereign credit ratings, especially in Least Developed Countries (LDCs) and Small Island Developing States (SIDS). While no country is fully prepared or immune, the impacts are worst for those countries least responsible for climate change and least able to pay for the response. For example, since 2019 multiple cyclones in Mozambique have helped push government debt to 125 percent of GDP. As the OECD notes in a recent report, without appropriate action climate impacts will undermine their ability to adapt to climate change and to achieve sustainable development.[5]

The underinvestment in, and lack of resilience of, societies is widening the divisions between those most and least capable of dealing with these climate, resource and other shocks. While many LDCs have shown great ingenuity in their responses, recent extreme weather events combined with Covid-19 have overwhelmed disaster response capabilities and state and local budgets. The strain on vulnerable countries is destroying the economic markets of the future and threatens global stability, peace, and prosperity.

There is an urgent need for developed countries to show leadership and offer concrete support to address adaptation and loss and damage. As the OECD says: "*Developed countries must scale up both financial and technical support to developing countries and make such support more accessible and predictable*."

While loss and damage incurred by developing countries is escalating rapidly, there are no dedicated financial or technical mechanisms available to address climate impacts. Those designed to support adaptation, mitigation, sustainable development and humanitarian relief are neither sufficient nor appropriate to address the scale and nature of loss and damage, now or in the future. While countries at COP26 decided to provide the resources needed to stand up the Santiago Network on Loss and Damage, it is not yet functioning to provide technical support and is not set up to channel finance to countries in need. New financial instruments and systems for delivering technical support are urgently required to meet the challenge.

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[1] Joint Statement by WMO and UNDRR on the Creation of a Centre of Excellence for Climate and Disaster Resilience, October 13, 2021, https://www.undrr.org/news/joint-statement-wmo-and-undrr-creation-centre-excellence-climate-and-disaster-resilience

[2] "Natural disasters cause $210 billion in damage in 2020, insurer says," *Reuters,* January 7, 2021, https://www.reuters.com/business/environment/natural-disasters-cause-210-billion-damage-2020-insurer-says-2021-01-07/

[3] "At least 85 percent of the world's population has been affected by human-induced climate change, new study shows," *Washington Post*, October 11, 2021 https://www.washingtonpost.com/climate-environment/2021/10/11/85-percent-population-climate-impacts/

[4] Integrated Assessment for Identifying Climate Finance Needs for Loss and Damage: A Critical Review, November 29, 2018 https://link.springer.com/chapter/10.1007/978-3-319-72026-5_14

[5] Managing Climate Risks: Facing up to Losses and Damages, OECD, November 1, 2021 https://www.oecd.org/environment/managing-climate-risks-facing-up-to-losses-and-damages-55ea1cc9-en.htm

The most climate vulnerable countries (LDCs and SIDS) are showing strong appetite to find practical solutions that can be applied now to address loss and damage. They are looking for *solidarity* in tackling these challenges and urgently seek practical support that builds upon existing financial and technical tools and instruments, while exploring appropriate innovative options.

In Glasgow, countries agreed to "establish the Glasgow Dialogue between Parties, relevant organizations and stakeholders to discuss the arrangements for the funding of activities to avert, minimize and address loss and damage associated with the adverse impacts of climate change, to take place in the first sessional period of each year of the Subsidiary Body for Implementation, concluding at its sixtieth session (June 2024)."[6] At the first session next June in Bonn, Germany, the US and other developed countries should demonstrate a new, and public, willingness to support the most climate vulnerable and least responsible countries to address loss and damage and focus on how they can provide vulnerable countries the support they need to address climate impacts practically and urgently. These dialogues offer a chance to set a new positive agenda for international cooperation that yields significant geopolitical benefits. Helping vulnerable countries prepare for and manage climate risk is not only a moral imperative, it is also imperative for ensuring global stability.

Building on the outcomes of COP26, the US should work with other countries to:

- **Operationalize the Santiago Network on Loss and Damage**, by providing funding for a secretariat under the UNFCCC, human resources and administrative systems to facilitate countries to identify their technical and financial support needs and to connect with the right providers of support, and funding to enable countries to access support, including financial support to highly vulnerable countries to conduct detailed national Loss and Damage risk and needs assessments.
- **Mandate an assessment of the resources required to address Loss and Damage** to feed into the forward-looking assessment under the Global Stocktake. This should quantify current expenditure being delivered by existing mechanisms, including humanitarian assistance, climate finance, development finance, and disaster risk reduction and response. It should also identify and quantify the gaps in finance currently available to address Loss and Damage, examining the quantity of finance available that can be used to address Loss and Damage and considering whether existing instruments are appropriate to do so effectively.
- **Collaborate with finance providers in the design and establishment of National Solidarity Funds for Loss and Damage**, which can be used to channel finance into the different activities needed to cope with climate impacts, tackling comprehensively the different forms of loss and damage over the range of time frames and contexts in which it is experienced, i.e. anticipatory action, humanitarian response, recovery and rehabilitation, disaster risk reduction and preparedness, social protection and risk avoidance. These funds would aim to support activities such as planned relocation, managed migration, migration friendly cities, portable social protection or loan repayment holidays as well as non-economic loss and damage, for example through psychological services, and would incentivise the actors from humanitarian, disaster risk reduction, social protection and climate change sectors to work together to deliver Loss and Damage finance in ways that are accessible, predictable, and flexible. The funding disbursed to National Solidarity Funds for Loss and Damage should be new and additional finance to existing development, humanitarian and climate finance.
- **Work with finance providers to develop the mosaic of financial instruments** required to fund the different activities that need to be delivered through national platforms, and to mobilise or establish appropriate financial delivery mechanisms to meet the varied needs of the most vulnerable countries. This would include disaster risk finance, parametric insurance, forecast based finance, anticipatory and rapid humanitarian response finance, local finance delivery, risk transfer/insurance, highly concessional recovery finance, debt restructuring and relief, debt for climate swaps, catastrophe bonds, long term investments in risk reduction, disaster preparedness, social protection and migration.

[6] Glasgow Climate Pact, November 13, 2021 https://unfccc.int/documents/310497

- **Announce a collective pledge to invest in regional disaster protection schemes** through the Risk Informed Early Action Partnership (REAP) initiative.
- Make new **bilateral commitments to support national disaster response and preparedness funds**.
- **Establish an international Climate Risk Observatory,** responsible for monitoring systemic and compounding risks, making sense of them and recommending appropriate policy responses, with a view to building a broad consensus on the nature of the risk landscape through objective and evidence-based analysis and to directing finance towards the most significant risks in the most vulnerable places.
- **Support the United Nations in developing a whole-of-system approach to addressing Loss and Damage**. Loss and Damage has implications that go well beyond the mandate and scope of the UNFCCC. All relevant UN agencies and multilateral institutions must come together to agree on how to support LDCs and SIDS to address Loss and Damage effectively.

**2. What are your views on the U.S.-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s? How will U.S. leadership on the global stage help to raise China's climate action ambition and work to hold China accountable to their commitments?**

The U.S.-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s is an important signal as there is no pathway for holding the increase in global temperature to 1.5C without engagement on climate between China and the US; the declaration shows that cooperation on this issue is possible despite tense relations. In the joint declaration, the US and China acknowledge the urgency of the climate crisis; they both must now show that they are taking the responsibility they promised to prevent dangerous climate change by taking bold actions in the 2020s.

Both President Biden and President Xi face domestic political challenges in making the transition from dirty to clean energy resources; demonstrations that both sides are taking action can be helpful in addressing these challenges. In Glasgow, President Biden and his team had to address the difficulties they have been facing in getting his climate legislation enacted; making progress on this domestic agenda will be critical to the administration's ability to encourage other countries to increase the ambition of their Paris commitments. While President Xi and other Chinese Communist Party leaders aren't exceptionally worried about climate change diplomacy right now, they have concerns that a negative public view of China's actions on climate could interfere with broader plans for expanding China's reach in the longer term and they are frustrated by criticisms of China's actions given how much they believe they have done already to reduce emissions.

In the joint declaration, the U.S. and China agreed to make methane reduction a principal focus of their individual and joint efforts. Because molecule-by-molecule methane is 80 times more potent at warming than $CO_2$, and because it dissipates more quickly in the atmosphere than $CO_2$, significant methane emissions reductions in the 2020s could increase the chances of meeting the Paris temperature limitation goal. Progress in developing the methane action plan promised by China in advance of COP27 in the declaration will be an important test of whether this is a significant step forward in US-China collaborative action. Other significant aspects of the declaration include China's commitment to accelerate the phase-down of domestic coal consumption in its 15th Five-Year Plan, and the commitment of both countries to "engage collaboratively in support of eliminating global illegal deforestation through effectively enforcing their respective laws on banning illegal imports."

The first meeting of the US-China "Working Group on Enhancing Climate Action in the 2020s" launched in the declaration will be held this week and may provide signals on how far collaboration can go on some of the other specific areas outlined in the declaration.

In response to your second question, by accepting the mitigation elements of the Glasgow Pact, China has acknowledged the gap between its current efforts and the 1.5C target, recognized the need to do more in this decade and committed to revisit its 2030 climate goal. Beijing needs to deliver on the promises made in the Glasgow Climate Pact soon with action—through putting an expiry date on domestic coal consumption and bringing forward its peaking target to put China in line with the 1.5C temperature limitation goal.

President Xi wants to make China a strong global player that can exert political and economic influence; perceptions that China is not doing its share to address the

climate crisis could limit China's ability to exert influence and may change the CCP's calculations on the pace of decarbonization.

The US can challenge President Xi's ability to exert influence by demonstrating climate leadership at home and abroad. While (fairly) immune to diplomatic pressure from the U.S., the CCP's competitive nature remains sensitive to action by the U.S. and other developed countries.

Chinese leaders assert that their form of government is superior to that of the U.S. and more broadly those of the West; US actions demonstrating a commitment to managing climate for the long-term raises U.S. credibility internationally and can build pressure on China to compete to show that their model of government can also deliver. This may be more effective in accelerating the pace of decarbonization in China than bilateral diplomacy, which has to date produced limited results.

More broadly, developing countries are looking for sustainable growth models. The U.S. can (and should) offer countries a low carbon sustainable economic growth model, by providing technology, technical and financial assistance, while preserving the countries' agency. This can build pressure on China to revise its terms for overseas infrastructure finance and technology assistance as well as to reduce its own domestic emissions which are putting other developing countries at risk for the worst effects of climate change.

The under delivery of the developed countries' $100 billion climate finance commitment and resistance to the loss and damage outcomes called for by developing countries at COP26 hindered efforts to build trust and cooperation, and reduced pressure on China to raise its own ambition. The US should work with other developed countries to identify significant sources of funding for loss and damage activities by COP27 in Egypt, and to ensure that the goal of doubling collective adaptation finance by 2025 is met. This will help build solidarity with developing countries and take away this excuse for inaction from China.

One significant announcement in Glasgow was the agreement by the US, EU, UK, Germany and France to provide assistance to South Africa in making a transition from coal to clean energy resources, which gave South Africa the confidence to put forward a more ambitious nationally-determined contribution under the Paris Agreement. Delivering similar energy transition deals in high-emitting developing countries in the Indo-Pacific including India, Vietnam, and Indonesia could enable them to take steps to phase down coal consumption and would leave China more isolated in its resistance to moving more aggressively on this front.

**3. How can the United States play a key role in accelerating global ambition on climate action post-COP26, ahead of COP27 in Egypt, and over the next several all-important years?**

Far-off net zero targets were not the major theme at COP26; rather, closing the gap in near-term action was the strong message from Leaders' speeches in the opening high-level segment and this was reinforced by India's new pledge to raise its 2030 ambition towards meeting its net zero by 2070 emissions goal and by a variety of leadership coalitions making economy-shifting commitments on coal, methane, elimination of fossil fuel investments, and deforestation.

The Glasgow Pact[7] acknowledges that current emissions limitation pledges aren't enough to achieve the reductions of 45% needed in global emissions by 2030 to "keep 1.5C alive" and sets out several requests for countries to step up action, including:

—"to revisit and strengthen the 2030 targets in their nationally determined contributions as necessary to align with the Paris Agreement temperature goal by the end of 2022;"

—for those "that have not yet done so to communicate . . . long-term low greenhouse gas emission development strategies towards just transitions to net zero emissions by or around midcentury;"

—"to accelerate the development, deployment and dissemination of technologies, and the adoption of policies, to transition towards low-emission energy systems, including by rapidly scaling up the deployment of clean power generation and energy efficiency measures, including accelerating efforts towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies, while providing targeted support to the poorest and most vulnerable in line with national circumstances and recognizing the need for support towards a just transition;" and

—"to consider further actions to reduce by 2030 non-carbon dioxide greenhouse gas emissions, including methane."

[7] Glasgow Climate Pact, November 13, 2021 https://unfccc.int/documents/310497

The decision also establishes a work program on cutting emissions before 2030 and calls for annual high-level ministerial round tables on pre-2030 ambition to be held at each COP meeting, to give the acceleration of action more political prominence.

Delivering on these opportunities by COP27 in Egypt next November will require coordinated diplomatic and public campaigning to ensure key countries deliver on the promise to raise their 2030 targets and policy pathways. As discussed in the response to question 6 below, mobilizing finance at scale to support national level just transition strategies (along the lines of the South Africa Just Energy Transition deal to shift its power system away from coal) will be necessary to open the political and fiscal space for more aggressive decarbonization commitments by major developing countries. The US should provide leadership by ramping up its own bilateral assistance on this front as well as by working to leverage private sector clean technology investments and pressing the World Bank and other multilateral financial institutions to deploy more of their financial firepower to this objective.

As mentioned above, COP26 saw ambitious sectoral pledges on methane, forests, coal, clean vehicles, and fossil financing. The US and other countries should provide leadership on defining tracking metrics and accountability mechanisms to help ensure that these sectoral and non-state actor commitments are credible; the expert task force created by UN Secretary General Guterres provides one important forum for this work.

With its leadership of the Major Economies Forum, as well as its chairmanship of the International Energy Agency's annual ministerial meeting in February and of the Clean Energy Ministerial and Mission Innovation summits in Pittsburgh next September, the US has opportunities to help shape the international collaborative clean energy architecture needed to accelerate the development and deployment of clean technologies in every sector of the global economy.

The US should also work with the incoming German G7 and Indonesian G20 presidencies to build on the progress made on climate and clean energy issues as last June's G7 leaders' summit in Carbis Bay and last June's G20 leaders' summit in Rome. This includes further elaboration of criteria for sustainable finance investments, strengthening private sector risk assessment and disclosure standards, and encouraging national efforts to phase out subsidies for fossil fuel production and consumption.

**4. As developing countries, including in Africa, develop and expand access to electricity, what are the economic and climate considerations that drive energy mix choices?**

For many developing countries in Africa and elsewhere, expanding access to modern energy services is a high priority. Sustainable Energy For All reports that while some progress has been made, much more remains to be done on this goal:

> "Globally, the number of people without access to electricity declined from 1.2 billion in 2010 to 759 million in 2019. Electrification through decentralized renewable-based solutions in particular gained momentum. The number of people connected to mini-grids has more than doubled between 2010 and 2019, growing from 5 to 11 million people. However, under current and planned policies and further affected by the COVID–19 crisis, the *2021 Tracking SDG7 Report* estimates 660 million people would still lack access in 2030, most of them in Sub-Saharan Africa. At the same time, some 2.6 billion people remained without access to clean cooking in 2019, one third of the global population. Largely stagnant progress since 2010 leads to millions of deaths each year from breathing cooking smoke, and without rapid action to scale up clean cooking the world will fall short of its target by 30 percent come 2030."[8]

Expanding public and private sector finance for clean energy investments is a key ingredient in closing these energy access gaps. But as the World Resources Institute notes in its Investing in Sustainable Energy Futures report,[9] there are several other factors hindering progress:

> "Energy prices do not reflect the true costs of fossil-fuel technologies to public health, to the local environment, and to the planet's climate system. Decision making in the electricity sector has tended to be both exclusive

[8] SEforAll Analysis of SDG 7 Progress, 2021, Sustainable Energy for All, August 11, 2021 https://www.seforall.org/data-stories/seforall-analysis-of-sdg7-progress-2021

[9] Investing in Sustainable Energy Futures, World Resources Institute, April 22, 2010 https://www.wri.org/research/investing-sustainable-energy-futures

and opaque, dominated by interests with a stake in "business as usual" practices. As the prices of fossil fuels rise along with our understanding of the environmental and social costs of conventional energy, we need new and better ways to meet energy demand and to support long-term development. Standard energy policy and regulatory mechanisms do not support the renewable energy and energy efficiency necessary to reduce emissions from the energy sector. In most countries, policies and regulations tend to emphasize short-term cost and supply considerations rather than the long-term benefits of the enhanced energy security, environmental performance, and cost savings over time offered by clean technologies."

Another WRI report [10] outlines several actions that can provide multiple benefits to developing countries, including generating good jobs and training opportunities in renewable energy and energy efficiency; accelerating energy access for all and providing economic and social development in remote areas, particularly with distributed renewables; reducing water stress; and improving household resilience:

- Further expanding renewable energy capacity and generation, including distributed renewable energy that can broaden energy access.
- Grid modernization and improvements in parallel with deploying renewables, including increased use of energy storage that can bolster the penetration of renewables.
- Actions to boost energy efficiency, particularly in buildings.
- Policies that can tap into synergies between the power sector and electrification in end uses such as transport and buildings.
- Accelerating the manufacture, purchase and use of a range of electric vehicles (EVs), including two-wheel, three-wheel and light-duty vehicles.
- Developing widespread smart charging infrastructure to facilitate the adoption of EVs.
- Boosting public transport as a central part of a transport strategy.
- Taking steps in land-use and mobility planning and infrastructure that support cycling and walking.
- Addressing freight transport by leveraging new clean fuels (including electrification) and information technology.

There were several encouraging developments at COP26 in Glasgow on this front:

—UN Secretary-General Guterres released the Global Roadmap for Accelerated SDG7 Action,[11] demonstrating support for clean energy as the golden thread tying our collective climate and development goals together.

—Several countries made new net-zero commitments, including Nigeria, India, Thailand, Nepal and Vietnam; nearly 90 percent of the global economy is now covered by net-zero commitments. The Energy Transition Council, championed by the COP26 Presidency, announced that it will continue at least until COP30 in 2025 to provide a platform for the global community to support these and other developing countries in meeting these targets and achieving a just energy transition.[12] It highlighted some important country-level milestones that have resulted from its work, including Nigeria's Energy Transition Plan; Morocco's agreement to phase out coal, and agreement by Indonesia and the Philippines to focus on the retirement of coal-fired power plants.

—More than 40 countries signed up to a political declaration on Energy Day to transition away from unabated coal power generation, and a group of 25 countries signed a UK-led joint statement committing to ending international public financing for the unabated fossil fuel energy sector by the end of 2022, prioritizing support for clean energy instead.[13]

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[10] NDC Enhancement and COVID–19 Recovery: Building Blocks for a Sustainable Future, World Resources Institute, September 23, 2020 https://www.wri.org/insights/ndc-enhancement-and-covid-19-recovery-building-blocks-sustainable-future

[11] "UN Secretary-General issues new global roadmap to secure clean energy access for all by 2030 and net zero emissions by 2050" Sustainable Energy For All, November 3, 2021 https://www.seforall.org/press-releases/un-secretary-general-issues-new-global-roadmap-to-secure-clean-energy-access-for-all

[12] "Energy Transition Council unveils strategic priorities beyond COP26," November 4, 2021 https://www.seforall.org/news/energy-transition-council-unveils-strategic-priorities-beyond-cop26

[13] Global Coal to Clean Power Transition Statement, UK COP26 Presidency, November 4, 2021, https://ukcop26.org/global-coal-to-clean-power-transition-statement/

Another bright spot is the U.S. Power Africa initiative [14] which aims to bring together nearly two dozen public and private sector partners to achieve universal, clean energy generation and access for Sub-Saharan Africa by accelerating new distributed renewable energy and grid-based solutions.

But as we work to lift people out of energy poverty, it's important to avoid massive new investments in natural gas infrastructure in Africa and elsewhere, as unabated use of gas also must be sharply curtailed by mid-century to meet the Paris Agreement's temperature limitation goals. A case study of Mozambique [15] just issued by my E3G colleague Jonathan Gaventa documents the risks inherent in such gas expansion strategies:

> "Since natural gas was first discovered off the coast of northern Mozambique a decade ago, it has become central to the country's development strategy. Revenues from gas—it was hoped—would catapult one of the least developed countries in the world to become a middle-income country by the 2040s. Gas production and exports were expected to spur widespread industrialisation, fund public investment and pay down debt. 10 years later, this story of 'gas for development' is failing. Conflict, corruption and economic distortion have meant that the promised economic benefits have not materialised.[16] Meanwhile, a global shift in climate and energy policies mean the outlook for future gas demand is shrinking. This increases the downside risks of the gas projects and greatly reduces the potential benefits. In turn, lower revenues will narrow the options for responding to resource curse issues and addressing Mozambique's pressing development needs.
>
> A reset of expectations on the role of gas in Mozambique's development is needed. For the Mozambican government, this means lowering dependence on increasingly uncertain gas revenues, and seeking out alternative pathways to prosperity. For the international partners, donors and financial institutions that enabled and encouraged the gas projects, it means re-evaluating assumptions on the development benefits of gas and redirecting financial support to more inclusive and sustainable economic sectors."

**5. Is the fact that America's production of fossil fuels has a lower carbon intensity than that of other countries a reason for the United States to delay or refrain from acting on climate?**

In a word, no. Even a cursory glance at the summary findings of the most recent national assessment of climate impacts and risks to the United States [17] demonstrates why moving aggressively to reduce the greenhouse gas emissions that are driving rapid human-induced climate change must be a national priority:

- Climate change creates new risks and exacerbates existing vulnerabilities in communities across the United States, presenting growing challenges to human health and safety, quality of life, and the rate of economic growth.
- Without substantial and sustained global mitigation and regional adaptation efforts, climate change is expected to cause growing losses to American infrastructure and property and impede the rate of economic growth over this century.
- The quality and quantity of water available for use by people and ecosystems across the country are being affected by climate change, increasing risks and costs to agriculture, energy production, industry, recreation, and the environment.
- Impacts from climate change on extreme weather and climate-related events, air quality, and the transmission of disease through insects and pests, food, and water increasingly threaten the health and well-being of the American people, particularly populations that are already vulnerable.

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[14] Power Africa initiative 2020 annual report, USAID, March, 2021 https://www.usaid.gov/powerafrica/annualreport

[15] The failure of 'gas for development'—Mozambique case study, Jonathan Gaventa, E3G, December 2, 2021 https://www.e3g.org/publications/the-failure-of-gas-for-development-mozambique-case-study/

[16] Mozambique: Cabo Delgado, Nampula & Niassa Humanitarian Snapshot—September 2021, UN Office for the Coordination of Humanitarian Affairs, November 2, 2021 https://reliefweb.int/report/mozambique/mozambique-cabo-delgado-nampula-niassa-humanitarian-snapshot-september-2021

[17] FOURTH NATIONAL CLIMATE ASSESSMENT, Volume II: Impacts, Risks, and Adaptation in the United States, US Global Change Research Program, 2018 https://nca2018.globalchange.gov/

- Climate change increasingly threatens Indigenous communities' livelihoods, economies, health, and cultural identities by disrupting interconnected social, physical, and ecological systems.
- Ecosystems and the benefits they provide to society are being altered by climate change, and these impacts are projected to continue. Without substantial and sustained reductions in global greenhouse gas emissions, transformative impacts on some ecosystems will occur; some coral reef and sea ice ecosystems are already experiencing such transformational changes.
- Rising temperatures, extreme heat, drought, wildfire on rangelands, and heavy downpours are expected to increasingly disrupt agricultural productivity in the United States. Expected increases in challenges to livestock health, declines in crop yields and quality, and changes in extreme events in the United States and abroad threaten rural livelihoods, sustainable food security, and price stability.
- Our Nation's aging and deteriorating infrastructure is further stressed by increases in heavy precipitation events, coastal flooding, heat, wildfires, and other extreme events, as well as changes to average precipitation and temperature.
- Coastal communities and the ecosystems that support them are increasingly threatened by the impacts of climate change. Without significant reductions in global greenhouse gas emissions and regional adaptation measures, many coastal regions will be transformed by the latter part of this century, with impacts affecting other regions and sectors.

A recent report[18] in *Nature* finds that to limit global temperature increases to 1.5°C, nearly 60% of global oil and fossil gas reserves and almost all the world's coal—90%—will need to remain in the ground in 2050; global oil and gas production would need to peak immediately and fall by 3% each year until mid-century.

And there are many other damaging impacts of fossil fuel production and use which are imposed on humans and natural ecosystems regardless of the carbon intensity of the fuels, including land degradation from mining, wells, pipelines and other facilities; water pollution as a result of acid runoff from coal mining operations, oil spills and leaks, and contamination from the toxic fluids used in oil and gas fracking; and air pollution from emissions of mercury, sulfur dioxide, nitrogen oxide, and particulates.

Of course, as the US takes actions to reduce the harmful impacts of domestic coal, oil, and gas production, it must also move aggressively to reduce demand for energy through energy efficiency measures that enable provision of energy services with lower energy inputs, and to rapidly increase use of solar, wind and other clean energy resources. Increasing imports of fossil fuels with a higher carbon intensity of production from other countries is not acceptable, as reducing US emissions while increasing global emissions is not a solution to the climate crisis.

**6. How important is U.S. leadership to the world meeting global climate finance targets?**

Keeping 1.5°C alive, protecting against climate impacts, and dealing with losses and damages requires mobilizing trillions of dollars per year. While COP26 did not deliver the finance required, it set up processes to do so in textual decisions on the post-2025 finance goal, adaptation finance, and loss and damage. President Biden and other leaders must respond to the call for trillions made in Glasgow by putting it at the top of an integrated diplomatic agenda which weaves across G7, G20, and UN processes.

It is clear that the speed of the global net zero transition called for in Glasgow cannot be realized without an equally ambitious implementation agenda. In support of acceleration, President Biden, Prime Minister Johnson and European Union President Von der Leyen put forward a new paradigm of sustainability finance—spanning both public and private investments—to mobilize the trillions needed to keep 1.5 degrees within reach.[19] Moving into 2022, the political stage is set for changes in the ways clean investment projects in developing countries are financed.

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[18] Unextractable fossil fuels in a 1.5 °C world, *Nature,* September 8, 2021, https://www.nature.com/articles/s41586-021-03821-8

[19] "U.S. President Biden, European Commission President Von Der Leyen, And UK Prime Minister Johnson Announce Commitment To Addressing Climate Crisis Through Infrastructure Development" November 2, 2021, https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/02/u-s-president-biden-european-commission-president-von-der-leyen-and-uk-prime-minister-johnson-announce-commitment-to-addressing-climate-crisis-through-infrastructure-development/

Availability and affordability of finance will determine how quickly countries deliver the climate transition, particularly as many developing countries continue to face a squeeze on their budgets given COVID–19. The focus must be on financial diplomacy, including:

- *Targeted finance packages for ambition:* The model demonstrated by UK, US, and European collaboration at COP26 to provide South Africa with a comprehensive, $8.5 billion just transition package for coal was hailed as a success. Such financial packages for the clean transition in India, Indonesia, and other countries could lay credible foundations for them to enhance their 2030 NDCs. The US, UK, EU, and other countries need to establish the platforms to catalyze such investment deals at the pace and scale needed.
- *Mobilising the trillions for climate transition:* The US and other donor countries must drive significant reforms to Multilateral Development Banks (MDBs) and national Development Finance Institutions (DFIs), including full alignment with Paris Goals and scaling-up leverage of private investment.[20] Increasing MDB capital could use Special Drawing Rights in addition to reallocating them to the International Monetary Fund's (IMF) Sustainability and Resilience Trust. This could unlock financial firepower for joint UK, US and EU initiatives—Build Back Better World (B3W), the Clean Green Initiative and the Global Gateway—which channel increased sustainable infrastructure investment.
- *Finance for solidarity:* The Glasgow Climate Pact has lined up COP27 to focus on the wide disparity between finance for mitigation and the lack thereof for adaptation and loss and damage. The US should support the UK COP26 presidency in organizing a second Climate and Development Ministerial to provide an early opportunity for donors to deliver on their COP26 pledge to double adaptation finance from $20 billion to $40 billion annually by 2025. This and other forums including the G7 ministerial meetings and the Petersberg Dialogue—both being led by Germany—will also be crucial opportunities for political-level agenda-setting in advance of the first of several loss and damage dialogues called for in the Glasgow Pact, to be held in Bonn, Germany next June.

[20] "Closing the trillion dollar gap to keep 1.5 degrees within reach," Julian Havers and Frank Schroeder, E3G, October 15, 2021 https://www.e3g.org/publications/closing-the-trillion-dollar-gap-to-keep-1-5-degrees-within-reach/