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SUBCOMMITTEE ON ENVIRONMENT AND CLIMATE CHANGE:

HEARING ENTITLED, "WE'LL ALWAYS HAVE PARIS:

SUBNATIONAL RESPONSES TO FEDERAL INACTION ON CLIMATE CHANGE"

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Introduction

My name is Andrew Light, and I am a Distinguished Senior Fellow in the Global Climate Program at the World Resources Institute (WRI) and University Professor at George Mason University. 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. We work in partnership with scientists, businesses, governments, and non-governmental organizations across the globe to provide information, tools and analysis to address problems like climate change, the degradation of ecosystems and their capacity to provide for human well-being. George Mason University is Virginia's largest public research university, committed to creating a more just, free, and prosperous world. I also bring to the committee my expertise as a practitioner of international climate policy and diplomacy. From 2013-2016 I served as Senior Advisor and India Counselor to the U.S. Special Envoy on Climate Change, and as

a staff member of the Secretary of State's Office of Policy Planning in the U.S. Department of State, working at the heart of the U.S. government's efforts to create the Paris Agreement on Climate Change.

Summary

The main themes of this testimony are as follows:

1. The Paris Agreement remains essential to international efforts to mitigate greenhouse gas emissions. However, greater ambition will be needed from all parties in order to achieve the temperature stabilization goals of the Paris Agreement and prevent the worst harms of projected climate change.
2. Other countries continue to take steps to promote sustainable development and reduce their emissions, including for example China and India. Both countries are motivated in part by domestic conditions such as poor air quality, in addition to the economic and other benefits of mitigating global climate change.
3. In the absence of federal action in the US, an array of more than 3500 subnational actors such as states, cities, businesses and universities have stepped up to the plate, committing to fulfill the U.S.'s pledge under the Paris Agreement to reduce emissions 26-28% below 2005 levels by 2025. This includes individual actions of states such as California, Maryland, Illinois and New York, and coalitions of non-federal actors such as We Are Still In and the U.S. Climate Alliance.
4. However, there is much that these actors cannot achieve on their own, and thus re-engagement at the federal level will be essential to fulfill the goals of the Paris Agreement. To avoid the worst impacts of climate change, the U.S. needs to lead by example in order to encourage other countries to increase their ambition on mitigation and adaptation as well. Subnational actors cannot replace the diplomatic influence of the U.S. government, nor should they be expected to; on the contrary, the current absence of U.S. leadership on climate change greatly increases the risk of global failure to adequately address this critical issue.

Current State of the Paris Agreement on Climate Change

Four years ago in Paris, the world came together and succeeded at producing the first ever global agreement that would limit greenhouse gas emissions in a meaningful way. It was also the first time that an agreement involving specific commitments on emissions was struck that did not put the burden of action entirely on developed countries, but has requirements for all parties, including all major emitters, to take ambitious action. At one point, only two countries, Syria and Nicaragua, were holdouts

in not signing the Agreement, and both have since formally joined it.[1] Despite the U.S. announcement of an intention to withdraw, over 190 countries around the world are now actively working to implement policies to achieve the goals of the Paris Agreement. At the last two G20 summits, leaders of all countries other than the United States stated that Paris Agreement is "irreversible." With President Trump's announced intention to withdraw from Paris in June of 2017, the United States has now isolated itself from the rest of the world, both with respect to finding global solutions to the problem, but also increasingly losing out to other countries on the tremendous markets that have been created as other countries move to fulfill their commitments under the Paris Agreement.

The Paris Agreement was a giant step in the right direction. For the first time in the decades of attempts to create a viable global climate agreement, parties representing over 96 percent of global greenhouse gas emissions have made commitments (technically, Nationally Determined Contributions, or NDCs) to reduce their emissions.[2] In contrast, the Kyoto Protocol's emissions obligations only had the participation of Parties representing 25 percent of global emissions, and this number shrank to under 20 percent over time. This is simply not sufficient participation to avoid dangerous levels of warming even if these parties had substantial ambition. While the initial pledges put forward by the parties to the Paris Agreement are not sufficient to meet the goal of keeping global temperature rise to 2 degrees Celsius (3.6 degrees Fahrenheit) over pre-industrial levels, let alone 1.5 degrees Celsius, the level beyond which the most recent Intergovernmental Panel on Climate Change (IPCC) report warns that dangerous impacts would increase significantly, it nonetheless sets up a system where parties are expected to make continual pledges of increasing ambition over time.[3] Initial analysis by Climate Action Tracker on the Paris commitments suggested that if all parties achieved their first targets, then temperature stabilization in the range of 2.4-2.7 degrees Celsius could be achieved by the end of the century, an improvement over previous policies by some parties that could have achieved stabilization in the range of 3.3-3.9 degrees Celsius. More recent analysis suggests a stabilization range closer to 3 degrees Celsius from the Paris Agreement, in part due to the current rollback of mitigation policies by the United States.[4] Again though, the Paris Agreement was not designed to be a static deal, but rather to encourage an ambition loop by which countries would set targets, gather data and report on their progress, and then set stronger targets every five years. This kind of scaling of ambition is necessary if we hope to keep global temperature rise to a safe level. The abrupt absence of the United States'

[1] https://www.bbc.com/news/world-middle-east-41904650
[2] http://cait.wri.org/
[3] https://www.ipcc.ch/wp-signup.php?new=www.ipcc.ch
[4] https://climateactiontracker.org/publications/warming-projections-global-update-dec-2018/

leadership – especially given the pivotal role we played in creating this agreement – will make this task much more difficult than it would be otherwise and, as I will argue below, could embolden opponents of climate action in other countries.

Progress in China and India

Because concerns have been raised in recent hearings before this sub-committee about the level of progress demonstrated by other large countries, particularly China and India, it is worth looking at the current status of their commitments under Paris. Both of these countries were singled out by President Trump in his Rose Garden speech as countries that were not required to do much under the Paris Agreement, and that would continue to build many new coal plants while, he claimed, we are forced to close those in the U.S.[5] While it is true that both China and India still have much progress to make in mitigating their emissions, they are taking major steps to do so, and have strong domestic incentives to make the transition to clean energy.

Since President Trump's announcement of his intention to withdraw the U.S. from the Paris Agreement, China has taken on a more prominent role on the international stage in combating climate change. President Xi Jinping has said that China is now in the "driver's seat" when it comes to addressing greenhouse gas emissions, and has repeatedly discussed his vision for the creation of an "ecological civilization."[6] China is currently leading the world in renewable energy investment, having committed to spending over $360 billion on renewable energy through 2020, which is expected to create roughly 13 million new jobs.[7] China recently launched a national emissions trading system for its power sector, which is now the largest carbon market in the world and will eventually be scaled up to cover its entire economy.[8] In 2017, the Chinese government halted or delayed over 150 coal plants throughout the country in response to overcapacity concerns.[9] Recently, China also unveiled its New Energy Vehicle (NEV) mandate, which calls for 4.6 million NEVs (expected to be predominantly electric vehicles) on the road by 2020, and the phase out of the internal combustion engine by 2040.[10] Given

[5] https://www.whitehouse.gov/briefings-statements/statement-president-trump-paris-climate-accord/
[6] https://qz.com/1105119/watch-what-xi-jinpings-19th-chinese-communist-party-congress-work-report-said-on-climate-change/
[7] https://www.wri.org/blog/2017/01/china-s-decline-coal-consumption-drives-global-slowdown-emissions
[8] https://qz.com/1159667/china-is-launching-the-worlds-largest-carbon-market/
[9] https://unearthed.greenpeace.org/2017/10/11/china-halts-150-coal-fired-power-plants/
[10] https://www.wri.org/blog/2018/12/how-china-raised-stakes-electric-vehicles

that the automobile market in China is the largest in the world, this move will likely reshape the entire global auto industry.[11]

Nonetheless, China remains the world's largest emitter of carbon dioxide, and its emissions were projected to have increased by 4.7 percent last year, after a minor uptick in 2017 following three years of stabilization.[12] (This followed a global trend which included an increase in 2018 of U.S. emissions as well.) However, it is important to note that China's initial commitment under the Paris Agreement requires it to peak its emissions by 2030 at the latest, and to make efforts to peak earlier if possible. In his Rose Garden speech announcing his intention to withdraw from Paris, President Trump seized on this, arguing that China "can do whatever they want for 13 years." But although its emissions increased in the past several years, experts have argued that its emissions could easily peak as early as 2025, five years earlier than its commitment.[13] The Alliance of Pioneer Peaking Cities, a group of 23 cities and provinces in China, has also committed to peaking its emissions early.[14] China has also already achieved its pre-Paris 2020 target to reduce the carbon intensity of its economy by 45 percent. In fact, due to its progress thus far, a Chinese government think tank, the National Center for Climate Change Strategy and International Cooperation (NCSC), recently recommended to the national government that it has "the potential and conditions for improving" its current commitments under Paris.[15] Finally, it is important to note that although its emissions have increased significantly in the past two decades, as of 2014 China's per capita emissions were still only 8.5 tons of carbon dioxide equivalent (tCO2e), while the United States' per capita emissions were 19.8 tCO2e, more than twice as high.[16] China will not be able to reverse course overnight, but it has already begun the process of decarbonizing its economy.

There are several reasons why China has continued to take action to address its domestic emissions despite the U.S. retreat under the Trump administration. Most importantly, it faces an air pollution crisis: over a million people die prematurely in China every year due to elevated levels of air pollutants.[17] This has the potential to create political unrest, which the Chinese government has a

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[11] https://www.bloomberg.com/opinion/articles/2018-10-14/china-s-car-market-is-maturing-not-crashing
[12] https://www.nytimes.com/2018/12/05/climate/greenhouse-gas-emissions-2018.html
[13] https://www.tandfonline.com/doi/full/10.1080/14693062.2016.1156515#aHR0cDovL3d3dy50YW5kZm9ubGluZS5jb20vZG9pL3BkZi8xMC4xMDgwLzE0NjkzMDYyLjIwMTYuMTE1NjUxNT9uZWVkQWNjZXNzPXRydWVAQEAw
[14] https://www.wri.org/blog/2016/06/23-chinese-cities-commit-peak-carbon-emissions-2030
[15] https://www.climatechangenews.com/2018/06/06/china-consider-increasing-paris-climate-pledge-2020-government-thinktank/
[16] https://www.climatewatchdata.org/
[17] http://www.wpro.who.int/china/mediacentre/releases/2018/20180502-WHO-Issues-Latest-Global-Air-Quality-Report/en/

strong interest in preventing. A study from the Chinese University of Hong Kong also calculated that air pollution-related impacts cost the Chinese economy 267 billion yuan, or $38 billion USD each year, in the form of premature deaths and lost productivity.[18] Furthermore, pursuing clean energy development creates jobs, brings the country greater energy security, and will lessen the damage to the Chinese economy caused by sea level rise and desertification as a result of changes in the climate. Thus, it is in China's own interest to reduce its domestic carbon emissions, regardless of what any other country is doing. There are other causes for concern coming out of China however, that require a strong U.S. nation-wide response. I will come back to those at the end.

India is another example of a large developing country that is still industrializing, but increasingly making strides to do so sustainably. While its total emissions climbed an estimated 6.3 percent in 2018, most of this growth was in order to provide electricity to people who had previously lacked access to reliable power. India's total emissions remain much lower than those of the United States (India makes up 7 percent of global emissions, while the United States accounts for 15 percent) and its per capita emissions are still very low, at only 2.5 tCO2e per person as of 2014.[19]

The main approach in India for reducing emissions is by pursuing very ambitious targets for the deployment of renewable energy, especially solar power. For its Paris commitment, India set a goal of 40 percent electricity generation from non-fossil fuel sources by the year 2030, as well as a reduction in its economy's carbon intensity of 33-35 percent by 2030.[20] According to the UN's annual Emissions Gap Report, India is on track to meet these targets.[21] In the near term, even prior to setting their target under Paris, Prime Minister Modi established an ambitious target to install 100 gigawatts (GW) of solar energy, 60 GW of wind power, and an additional 15 GW of biomass and small hydro by the year 2022, creating an estimated 330,000 new jobs in the process.[22] The solar target alone is the largest single-sector target of its kind in the world. India energy watchers in the U.S. were skeptical of the feasibility of these targets when they were originally announced, but now India is making excellent progress on delivering these targets. The country's growth in renewable energy over just the last five years has been

[18] https://www.scmp.com/news/china/science/article/2166542/air-pollution-killing-1-million-people-and-costing-chinese
[19] https://www.climatewatchdata.org/
[20] https://www.climatewatchdata.org/ndcs/country/IND
[21] https://www.wri.org/blog/2018/11/5-things-you-need-know-about-un-emissions-gap-report
[22] https://www.nrdc.org/sites/default/files/greening-india-workforce.pdf

staggering. The costs of renewable energy in India have fallen 50 percent in the past two years.[23] Its solar energy capacity increased eightfold from 2014 to 2018 (2.63 GW to 22 GW), and its wind power capacity increased from 21 GW to 34 GW over the same period. This brings its total renewable energy capacity to 70 GW.[24] India is performing so well that it is now aiming to reach 227 GW of renewable capacity by 2022 by also adding floating solar and off-shore wind to the package.[25] For context, this is nearly double current U.S. levels of wind and solar capacity.[26] Meanwhile, the number of planned coal plants has plummeted, shrinking by a quarter in the first half of 2018.[27]

India, like China, is driven by domestic incentives to keep its greenhouse gas emissions in check. The most important is that India's air pollution levels have become a domestic crisis. Air pollution caused roughly 1.24 million deaths in India in 2017 alone.[28] The WHO also estimates that 11 of the 12 cities with the highest levels of particulate matter pollution in the world are in India.[29] A 2014 analysis showed that declines in agricultural productivity as a result of poor air quality caused losses of crops that could have otherwise fed 94 million people.[30] India is also seeking to provide electricity to over 30 million homes that are still without power, and ensuring that energy access is reliable for all its citizens.[31] It also stands to benefit economically from being a leader in the solar energy industry, and will achieve greater energy security in the process. Because of India pushing forward with this transition, it is projected to be on track to achieve part of its Paris target of 40 percent non-fossil-based power capacity by 2030.

Success in Completing the Rules for the Paris Agreement

In his remarks at the White House when he announced his intention to withdraw, President Trump stated within the same sentence that the Paris Agreement was "nonbinding," but also that it would impose "draconian financial and economic burdens" on our country.[32] Those two statements are

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[23] https://data.bloomberglp.com/professional/sites/24/2017/11/BNEF_Accelerating-Indias-Clean-Energy-Transition_Nov-2017.pdf
[24] https://www.businesstoday.in/sectors/energy/india-renewable-energy-target-227-gw-solar-wind-government/story/278594.html
[25] https://economictimes.indiatimes.com/industry/energy/power/india-will-add-225-gw-renewable-energy-project-capacity-by-2022-r-k-singh/articleshow/64461995.cms?from=mdr
[26] https://www.eia.gov/outlooks/aeo/pdf/aeo2019.pdf
[27] http://ieefa.org/india-coal-plant-cancellations-are-coming-faster-than-expected/
[28] https://www.thelancet.com/action/showPdf?pii=S2542-5196%2818%2930261-4
[29] https://www.vox.com/2018/5/8/17316978/india-pollution-levels-air-delhi-health
[30] https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2014GL060930
[31] https://www.bloomberg.com/news/articles/2018-04-26/india-nears-power-success-but-millions-are-still-in-the-dark
[32] https://www.vox.com/energy-and-environment/2017/6/2/15727984/deceptions-trump-paris-speech

inherently contradictory, and only the former is true. But the details of how the Paris Agreement will be implemented will have a tremendous effect on global mitigation and adaptation efforts. At the last Conference of the Parties to the UN Framework Convention on Climate Change (COP24) in Katowice, Poland this past December, the Parties to the Paris Agreement adopted a set of guidelines for implementing the agreement, including how countries will be expected to report their emissions data, potentially enhance their existing NDC targets by 2020, and conduct a Global Stocktake on overall progress towards meeting the targets under Paris in 2023. In particular, the rules on monitoring, transparency, reporting, and review of emissions inventories as well as progress toward achieving each Parties' commitments, established a common set of requirements for both developed and developing countries. This is an outcome for a climate agreement sought by the Clinton, George W. Bush, and Obama administrations. It was achieved in part by cooperation between the U.S. and Chinese delegations, which continued to co-facilitate a working group on this topic.[33] This will ensure that going forward, we can be confident in emissions estimates and know for certain which countries are doing their fair share if we choose to re-engage with the Paris Agreement. But maintaining the stability of this outcome will be threatened once the U.S. leaves the Paris Agreement, and is no longer able to block attempts to slip back into a system with different sets of rules for different kinds of parties.

Subnational Engagement in International Climate Action

Fortunately, American engagement in climate change mitigation efforts did not end with President Trump's announcement of his intention to withdraw from Paris. As should be clear from the other testimony presented to the subcommittee today, multiple coalitions of non-federal actors, including We Are Still In (WASI), today representing over 3,500 entities across the country, [34] and the U.S. Climate Alliance, comprised of 21 governors from states representing over half of the U.S. population,[35] have continued to take actions to work towards achieving the U.S. emissions reduction pledge under Paris.[36]

Almost immediately following President Trump's announcement on Paris, these leaders have made an effort to showcase their actions on the international stage, demonstrating to the rest of the world that much of the United States will move forward on this issue with or without the federal

[33] https://www.wri.org/blog/2018/12/cop24-climate-change-package-brings-paris-agreement-life
[34] https://www.wearestillin.com/
[35] https://www.usclimatealliance.org/
[36] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/United%20States%20of%20America%20First/U.S.A.%20First%20NDC%20Submission.pdf

government. This groundswell of support has come as a relief to global leaders, with German Chancellor Angela Merkel commenting on the formation of America's Pledge, "I want to warmly welcome this step as it emphasizes the support for the climate agreement across large parts of the U.S. regardless of the decision of President Trump to withdraw."[37] In Japan, political and private sector leaders turned their praise into action, when a group of over 100 companies, private organizations, and local governments launched the Japan Climate Initiative. The group, which includes the likes of the Tokyo Metropolitan Government and Panasonic, is modeled after We Are Still In and intends to work with them.[38]

In response to President Trump's announcement, the state of California emerged as an early leader in promoting subnational climate action abroad. California's then-governor Jerry Brown traveled to China, where he signed an agreement with China's Ministry of Science and Technology to work together on efforts to reduce emissions by developing renewable energy. The agreement also involved cooperation on the development of other low-carbon technologies, including zero-emission vehicles, energy storage, grid modernization and low-carbon urban development. Brown also signed agreements on technology development with officials from the provinces of Jiangsu and Sichuan, which have a combined population of greater than 160 million.[39] These agreements built on existing memoranda of understanding that the state had signed with China in 2009 and 2013, with Jiangsu province[40] and China's National Development and Reform Commission respectively.[41] Brown was also part of a delegation of non-federal leaders, including Washington state's Governor Jay Inslee and former mayor of New York City Mike Bloomberg, who traveled to the 2017 Conference of the Parties to the UN Convention on Climate Change in Bonn, Germany to demonstrate the non-federal commitment in the U.S. to the Paris Agreement.[42] The pavilion organized by these parties at Bonn to showcase their efforts to fulfill the U.S. pledge under Paris was actually larger than most other G20 countries.

Governor Brown's office also organized the Global Climate Action Summit (GCAS) in September 2018, a forum for subnational actors to showcase their mitigation efforts and secure more ambitious

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[37] https://www.handelsblatt.com/today/politics/problem-coal-merkel-swipes-at-trump-on-climate/23573034.html?ticket=ST-4077897-c2XherI7EBoCM9dhtkLi-ap5

[38] https://www.japantimes.co.jp/news/2018/07/06/national/science-health/100-firms-local-governments-private-groups-japan-unite-climate-change/#.XHA1Q-hKiUk

[39] https://www.theguardian.com/us-news/2017/jun/07/china-and-california-sign-deal-to-work-on-climate-change-without-trump

[40] https://www.nrdc.org/experts/barbara-finamore/california-and-jiangsu-province-sign-agreement-cooperation-climate-policies

[41] https://www.ef.org/blog/china-california-sign-climate-mou/

[42] https://www.nytimes.com/2017/11/11/climate/un-climate-talks-bonn.html

commitments.[43] Outcomes from the summit included a commitment from the U.S. Climate Alliance member states to work together on carbon sequestration efforts,[44] three states (Connecticut, Maryland, and New York) joining California in announcing pledges to phase down the use of super-polluting hydrofluorocarbons (HFCs),[45] and four states (Connecticut, Hawaii, Minnesota, and New York) joining the Powering Past Coal Alliance, which pledges to fully phase out the use of coal-fired power plants for electricity generation.[46] The Global Climate Action Summit also showcased the actions of subnational actors from countries around the world. Subnational leaders from 103 countries made over 500 commitments,[47] including a commitment from Mahindra & Mahindra, a leading Indian technology and vehicle manufacturing company, to achieve carbon neutrality by the year 2040,[48] as well as several commitments from individual Indian states.[49]

Limits to Subnational Action

Despite the impressive subnational showings and commitments at the UN climate talks, the Global Climate Action Summit and elsewhere, there are clear limits to U.S. subnational action. These entities can't replace all U.S. federal action, they can't replace American global leadership to ensure that the Paris Agreement is a success by helping other countries to meet their targets, and subnational actors can't take the steps necessary to ensure that the U.S. is secure from global security threats that are increasingly catalyzed by climate change.

First, subnational actors will not be able to make the deep emissions cuts needed in the U.S. all on their own. A report released at the Global Climate Action Summit, *Fulfilling America's Pledge*, quantifies the impact of subnational climate actions using analysis from WRI, University of Maryland, Rocky Mountain Institute, and others. The research found that existing commitments by U.S. cities, states, and the private sector, when combined with federal policies that are still in effect, would reduce U.S. emissions by about two-thirds of what is needed to meet the U.S. pledge to reduce emissions 26-28 percent below 2005 levels by 2025.[50] Further action and ambition by subnational actors, so that a

[43] https://www.globalclimateactionsummit.org/about-the-summit/
[44] https://www.usclimatealliance.org/nwlchallenge/
[45] https://insideclimatenews.org/news/10092018/new-york-ban-hfcs-potent-greenhouse-gas-climate-pollutant-cooling-refrigeration
[46] https://www.globalclimateactionsummit.org/powering-past-coal-alliance/
[47] https://www.globalclimateactionsummit.org/summit-outcomes/
[48] https://economictimes.indiatimes.com/industry/auto/auto-news/mahindra-mahindra-to-go-carbon-neutral-by-2040/articleshow/65807562.cms
[49] https://www.nrdc.org/stories/tracking-climate-commitments-global-climate-action-summit
[50] https://www.bbhub.io/dotorg/sites/28/2018/09/Fulfilling-Americas-Pledge-2018.pdf

broader swath of them take even greater advantage of current economic and technical potential, could reduce emissions in that time frame by 24 percent, almost reaching the target. Other countries quite reasonably worry though that goals like these can be achieved given concerns about the stability of U.S. subnational action over time, especially in smaller states, without some level of federal cooperation and support.

Second, without federal policies, it will be difficult for subnational actors to promote the structural changes in the U.S. economy that are needed to promote deep decarbonization over the long term. For the world to achieve our long-term climate stabilization goals, it is not enough for the U.S. to marginally bring down its emissions over the next few years. Instead, we must aim for a more ambitious target like achieving net-zero emission by mid-century. There will be ample economic benefits with this transition, as has already been demonstrated in those states supporting a clean energy transition, so we must ensure that the benefits of the transition to a climate-smart economy are equally distributed across the country. Federal leadership is needed to make this happen, and to make certain workers in fossil-intensive industries benefit from a just and more sustainable transition within their own industries or to other industries.

Third, U.S. federal leadership is especially necessary in global climate negotiations because states, cities and businesses can't participate directly in international climate change negotiations. They do not have a vote in these negotiations, so they won't have a seat at the table with member Parties. Active American participation in the UNFCCC Conference of the Parties each year is essential to ensure that the Paris Agreement maintains the elements that are beneficial to U.S. interests. This includes making sure there is no backsliding into some form of "bifurcation" where different groups of countries operate with different rules on accountability based on their self-defined development status. President Trump's decision to withdraw from the agreement has already increased distrust between developing and developed countries. For example, the insistence of the U.S. at last year's climate talks to block "welcoming" the IPCC report on the potential to achieve climate stabilization at 1.5 Celsius, and the consequences of doing so – a move that was supported by Russia and Saudi Arabia – caused significant disruptions in the negotiations and for a time threatened consensus on much more impactful parts of the negotiations. Since the process of withdrawing the U.S. from the Paris Agreement will not be complete until November 2020, the U.S. still has a seat at the negotiating table. However, it already has diminished influence due to its intention to withdraw and will lose that influence entirely if it fully exits the agreement.

Fourth, because this is a global problem that requires global solutions, we need to work with other countries to encourage them to achieve their own targets and make increasingly ambitious commitments over time. Unfortunately, President Trump's position has provided a convenient excuse in some countries to possibly pull back from the Paris Agreement, or water down their current commitments. Former Australian Prime Minister Tony Abbott urged his successor Malcolm Turnbull to follow Donald Trump's lead and cancel the commitments Australia had made under Paris, signed by Abbott himself saying, "Absent America, my government would not have signed up to the Paris treaty, certainly not with the current target."[51] In the months following President Trump's announcement, President Erdogan of Turkey said that the U.S. decision to pull out of Paris means Turkey is less inclined to ratify the deal in parliament.[52] And President Jair Bolsonaro of Brazil regularly flirted with the idea of pulling his country out of Paris during the last campaign, openly praising President Trump's decision to leave.[53] While he has apparently reversed himself, he has, according to analysis in The Washington Post, regularly, "railed against the country's 'excessive' policing of its rural areas and forests. He floated the idea of combining the country's agriculture and environment ministries, which critics worry would enfeeble environmental protections."[54] While international pressure for these countries to remain committed to Paris is strong, the point here is that American subnational actors are not in a position to forcefully answer such criticisms when the stance of the U.S. federal government so dramatically contravenes them.

Finally, we also need to help to prepare our strategic partners abroad for the changes that are occurring now lest we risk both their safety and the safety of the American people. Subnational actors do not have the capacity or resources to work with our strategic partners in developing countries who are experiencing climate-driven risks. Even our wealthiest states aren't in the business of enhancing capacity in developing countries so that they are less vulnerable to how climate change can exacerbate already fragile political conditions, which this month's Worldwide Threat Assessment of the U.S. Intelligence Committee unequivocally stated is a clear concern: "global environmental and ecological

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[51] https://www.smh.com.au/politics/federal/follow-donald-trump-on-climate-tony-abbott-urges-pm-20180703-p4zpah.html

[52] https://www.reuters.com/article/us-g20-climatechange-turkey/erdogan-says-u-s-stance-stalls-turkish-ratification-of-paris-climate-deal-idUSKBN19T11R

[53] https://www.theguardian.com/environment/2018/oct/09/brazils-bolsonaro-would-unleash-a-war-on-the-environment

[54] https://www.washingtonpost.com/world/2018/10/19/how-brazils-bolsonaro-threatens-planet/?utm_term=.3f5d48bc58fe

degradation, as well as climate change, are likely to fuel competition for resources, economic distress and social discontent through 2019 and beyond."[55] Subnational actors can't stand in for the U.S. federal government to assure our allies in strategically critical parts of the world that they will have a friend and ally as they face increasingly difficult climate vulnerabilities, either slow-onset events like sea level rise, or increasingly intense storms, floods, and droughts. With the U.S. effectively absent from global efforts to make the world more resilient, other countries, as I will turn to at the end of this testimony, will step in and become more influential.

Federal Inaction Threatens U.S. Business Interests

There are further economic consequences to lack of federal leadership. The 2018 report of the Global Commission on the Economy and Climate estimates that a world-wide transition to a low-carbon, sustainable growth path "could deliver a direct economic gain of U.S. $26 trillion through to 2030 compared to business-as-usual."[56] This is clearly something that we should be competing with other countries on. Subnational actors, including U.S. businesses alone however cannot do this, and moreover are limited in their ability to protect the overall U.S. economy from the disruptions of international trade that are already happening with climate change. An important message from the National Climate Assessment delivered to Congress last year is that "The impacts of climate change, variability, and extreme events outside the United States are affecting and are virtually certain to increasingly affect U.S. trade and economy, including import and export prices and businesses with overseas operations and supply chains."[57]

U.S. businesses are deeply interlinked with international supply chains. They will face challenges as extreme weather and climate change increasingly impact international manufacturing, storage, and transportation infrastructure. Climate change is also likely to lead to large changes in the availability and prices of many commodities and agricultural goods, impacting U.S. businesses abroad and U.S. trade. As an illustrative example, the 2011 flooding in Thailand reverberated around the world to negatively affect U.S. business interests. Western Digital, a U.S.-based company that produces 60 percent of its hard drives in Thailand, had to slow down shipments and experienced $199 million in losses. Global hard drive prices temporarily doubled, affecting more U.S. companies like Apple, HP, and Dell. In addition, the flooding forced Ford to halt vehicle production in Thailand, and Honda had to

[55] https://www.dni.gov/files/ODNI/documents/2019-ATA-SFR---SSCI.pdf
[56] https://newclimateeconomy.report/2018/executive-summary/
[57] https://nca2018.globalchange.gov/chapter/16/

decrease its vehicle production in the United States and Canada.[58] Federal leadership is the only way America can respond to these kinds of economic threats in a coordinated and comprehensive way.

While subnational actors have some tools to promote U.S. business interests related to climate mitigation and adaptation abroad, U.S. companies still suffer when our national government is perceived as not cooperating with the rest of the world on this critical problem. The Paris Agreement expands the international market for innovative sustainable technologies by committing all countries to reduce emissions. The International Finance Corporation found that the commitments under the Paris Agreement by developing countries alone represent $23 trillion in investment opportunities in emerging markets by 2030.[59] U.S. businesses need to be a part of that market. The U.S. retreat from the agreement puts their reputations on the line, which is why so many U.S. companies are eager to announce their continued support for it. Sixty-nine of the Fortune 500 companies publicly supported the Paris Agreement before President Trump announced his intention to withdraw, including the four biggest in the country: Walmart, ExxonMobil, Apple, and Berkshire Hathaway.[60] In 2017, 26 companies took out an advertisement urging President Trump to stay in the Paris Agreement, including Apple, Levi, Mars, and Tiffany & Co. Their argument was that the Paris Agreement strengthens competitiveness – it "reduces the risk of competitive imbalances for U.S. companies because it requires action by all countries and ensures a more balanced global effort." U.S. companies want to get ahead of the curve on low-carbon innovation, buoyed by the certainty that the U.S. government will remain committed to climate action like the rest of the world, including the other markets they work in.

At the same time, we need federal leadership to make sure that all parts of the United States benefit from the job creation that comes along with building up clean energy sectors and improving infrastructure for climate resilience. Already, 3.2 million Americans are employed in wind, solar, energy efficiency, and other clean energy jobs, according to the 2018 U.S. Energy and Employment Report.[61] This is about three times the number of jobs in fossil fuels. The two fastest growing jobs in the country are solar photovoltaic installers and wind turbines service technicians, according to the Bureau of Labor Statistics.[62] About 1 in every 6 construction jobs in the country is connected to energy

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[58] https://nca2018.globalchange.gov/chapter/16/
[59] https://www.ifc.org/wps/wcm/connect/news_ext_content/ifc_external_corporate_site/news+and+events/news/new+ifc+report+points+to+%2423+trillion+of+climate-smart+investment+opportunities+in+emerging+markets+by+2030
[60] https://www.eenews.net/assets/2017/05/26/document_daily_02.pdf
[61] https://www.usenergyjobs.org/
[62] https://www.bls.gov/emp/tables/fastest-growing-occupations.htm

efficiency.[63] A quarter of the jobs in the automobile industry are related to fuel efficiency or alternative fuel vehicles.[64] We do not want to stop this progress while the rest of the world economy is still going forward. Without federal support for innovative research and development, even the states and cities that want to act on climate will eventually find it hard to keep up. The uncertainty over whether the U.S. will stay in, leave, or come back to the agreement will make it difficult for the businesses to make long-term investments.

When President Trump announced his intention to withdraw from the Paris Agreement, he cited a misleading report that said the U.S. commitment to the Paris Agreement would hurt the economy. This claim is based on a highly unrealistic and unnecessarily expensive pathway to achieve the U.S. emissions targets. It also assumes that clean energy innovation slows down, which is very unlikely to be the case.[65] In contrast, the private sector largely considers the risks of climate change with absolute seriousness. Every year, the World Economic Forum (WEF) conducts a Global Risks Perception Survey, asking members of its global multi-stakeholder community what they believe to be the greatest threats to the economy and society. This year, the Global Risks Report found that "extreme weather events" and "failure of climate-change mitigation and adaptation" were respectively the number one and number two risks in terms of likelihood. They were the number two and number three risks in terms of impact, behind only weapons of mass destruction (which were rated extremely low on likelihood).[66]

American Leadership is a Geopolitical Necessity on Climate Change

Former Secretary of State Madeleine Albright once called the United States the "indispensable nation," referring to its ability to provide global leadership and security.[67] This applies equally well to its position in global efforts to address climate change. A lack of U.S. participation was one of the key factors that doomed the Kyoto Protocol, and conversely, U.S. leadership, along with China, was essential to achieve the Paris Agreement, creating a race to the top for ambition in many countries' commitments under the

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[63] https://www.nrdc.org/experts/lara-ettenson/good-news-good-jobs-clean-energy-outpaces-fossil-fuels
[64] https://www.nrdc.org/experts/lara-ettenson/good-news-good-jobs-clean-energy-outpaces-fossil-fuels
[65] https://www.wri.org/blog/2017/04/us-chamber-commerces-energy-institute-misleads-climate-action-costs-3-things-know. In fact, NERA objected to the use of their study in justifying this announcement: "Use of results from this analysis as estimates of the impact of the Paris Agreement alone mischaracterizes the purpose of NERA's analysis, which was to explore the challenges of achieving reductions from US industrial sectors over a longer term. Selective use of results from a single implementation scenario and a single year compounds the mischaracterization." https://www.nera.com/news-events/press-releases/2017/nera-economic-consultings-study-of-us-emissions-reduction-polici.html
[66] http://www3.weforum.org/docs/WEF_Global_Risks_Report_2019.pdf
[67] https://1997-2001.state.gov/statements/1998/980219a.html

agreement. With the U.S. retreat from the international community, our ability to put pressure on other countries to deliver on commitments and increase ambition has disappeared. We see the global effects of the leadership gap we have created in the inability of any party to rein in China's financing of fossil fuel-intensive infrastructure around the globe. Only full re-engagement in the Paris Agreement, and global efforts to address climate change, by the U.S. government can remedy this issue.

Though there have been positive developments in China in recent years as was documented above, it can and should be doing more to lessen its overall contribution to global climate change, including in other countries. It has made great strides in its effort to lessen its pollution at home, but China continues to finance many coal projects in developing countries. Of particular concern is its Belt and Road Initiative, a massive infrastructure project worth a cumulative $6 trillion USD that includes 70 countries throughout Southeast Asia, Africa, and Europe. If the cost reaches this estimated level, it will be roughly forty-six times as large as the Marshall Plan, through which the U.S. spent $130 billion in today's dollars on rebuilding Europe after the Second World War.[68] The project is intended to promote China's economic interests throughout these regions through the construction of a series of ports, highways, and railways. However, if not done with an emphasis on low-carbon development, this has the potential to lock in future greenhouse gas emissions for many decades. While China has taken initial steps to incorporate sustainability into investment decisions, the majority of investments in Belt and Road infrastructure projects thus far have not been consistent with the goals of the Paris Agreement. From 2014 to 2017, 91 percent of all energy-sector syndicated loans in which the major Chinese development banks participated were in fossil fuel projects. Over the same timeframe, 93 percent of investments in energy by the Silk Road Fund and 95 percent of foreign energy investments by Chinese state-owned enterprises were in fossil fuels.[69]

Toward the end of the Obama administration, the United States attempted to engage with China on this issue, but was not able to extract a commitment from the Chinese to curtail its foreign investment in fossil fuel projects before President Obama left office.[70] Since then, unsurprisingly, the U.S. has shown no interest in challenging China on this issue, given President Trump's commitment to expanding fossil fuel production in the U.S., and no other country has been able to exert pressure on China to reduce its international coal financing. The result of this lack of oversight is that China gets to have the best of both worlds. It can take action domestically and be seen as a global leader on climate

[68] https://www.newyorker.com/magazine/2018/01/08/making-china-great-again
[69] https://www.wri.org/publication/moving-green-belt-and-road-initiative-from-words-to-actions
[70] https://obamawhitehouse.archives.gov/the-press-office/2016/03/31/us-china-joint-presidential-statement-climate-change

change, while still exporting fossil-intensive technology to other countries without regard for their NDC targets. China benefits from the global influence it gains through development assistance, but due to a lack of U.S. engagement, they are not currently ensuring that this development is sustainable.

How Congress Can Take Action

Despite the groundswell of subnational action taking place over the past few years, it is clear that action at the federal level will still be indispensable if we are to adequately reduce our greenhouse gas emissions and encourage similar action abroad. There are a number of measures that Congress could pursue in order to revive mitigation efforts at the federal level. You are currently engaged in a discussion of many of them. While it is outside the scope of this testimony, more innovative programs and incentives such as the 45Q tax credit are needed to create a needed boost for those non-federal actors in the U.S. who are still moving forward. Expansion of R&D programs to more areas that we now understand as essential to achieving our global climate stabilization goals, such as carbon removal technologies, is essential.[71] However, among those specific to the Paris Agreement, and the global regime that has been launched to make Paris a success, include:

1. **Pass a resolution expressing the commitment of Congress to the Paris Agreement:** The first step that Congress should take is to pass a resolution, similar to the one introduced by Reps Jared Huffman (D-CA), Don Beyer (D-VA), and Brian Fitzpatrick (R-PA),[72] expressing Congress's opposition to withdrawing from the Paris Agreement and its commitment to fulfill its goals. This resolution should also express support for the subnational action that has grown over the past two years to fill the void at the federal level and pledge to support it. Congress can send a powerful message to the administration that the United States should not be the only country to turn its back on the global effort to combat climate change.
2. **Double funding to Department of Energy (DOE) clean energy research, development, and deployment:** By stabilizing increased funding levels and expanding loan programs, Congress can catalyze U.S. efforts to keep up with China, which is currently lapping the U.S. in positioning for the 21st-century energy marketplace. China invests 20 percent of its R&D budget in energy technologies, while we invest just two percent. It shows. China has sprinted ahead in the race for clean energy superiority, last year nearly doubling our investment in clean energy

[71] https://www.wri.org/blog/2018/12/wanted-325-million-federal-rd-jumpstart-carbon-removal
[72] https://www.congress.gov/bill/116th-congress/house-concurrent-resolution/15?q=%7B%22search%22%3A%5B%22paris+agreement%22%5D%7D&s=1&r=1

technologies.[73] In the midst of all this, $600 million in congressionally-approved funds for such transformative DOE bodies as ARPA-E and the Office of Energy Efficiency and Renewable Energy is, for some reason, going unspent.[74] Congress should use its oversight authority to ensure that the administration spends these funds as intended.

3. **Ensure that the international assistance funds that you have allocated are well spent.** The recently passed funding bill for FY 2019 includes $776 million in bilateral allocations for environmental programs, a nearly $400 million increase compared to FY 2018. It is not at all clear though how much of this would go to climate-related assistance out of USAID or the State Department.[75] Whatever doubts remain in the executive branch about the reality of climate change, many of our most important strategic allies in volatile parts of the world see this as an existential threat that must be addressed. As mentioned above, our own intelligence community agrees. Ideology should not interfere with the best use of these funds. This money should be tracked and accounted for, with guidance from this congress to make sure it goes to programs that face up to the reality of climate change, and the good that can come to all of us from working together to create a more resilient world.

Conclusion

As members of this committee on both sides of the aisle have argued, we need strong commitments from every country in the world in order to see major reductions in global greenhouse gas emissions. This is exactly why participation in the Paris Agreement is of the utmost importance. U.S. subnational actors are currently bearing the burden of U.S. participation in the global climate change regime. But without the United States leading by example, other countries may slip, arguing that they should not be expected to do more if the U.S. is not fully engaged. The United States has been the deciding factor in the success or failure of past global efforts to reduce greenhouse gas emissions, and this will continue to be the case. Throughout American history, we have never run from the most pressing and challenging issues of the time. While our current president has turned his back on our closest allies and retreated from our role as an international leader, the next generation of Americans is expecting on us to step back into the international arena and lead the global fight against climate change as soon as possible.

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[73] https://about.bnef.com/blog/clean-energy-investment-exceeded-300-billion-2018/
[74] https://www.nrdc.org/media/2018/181210
[75] https://www.wri.org/blog/2019/02/us-climate-finance-improves-2019-budget-theres-still-long-way-go