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

[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.

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 per cent of GDP.[7]

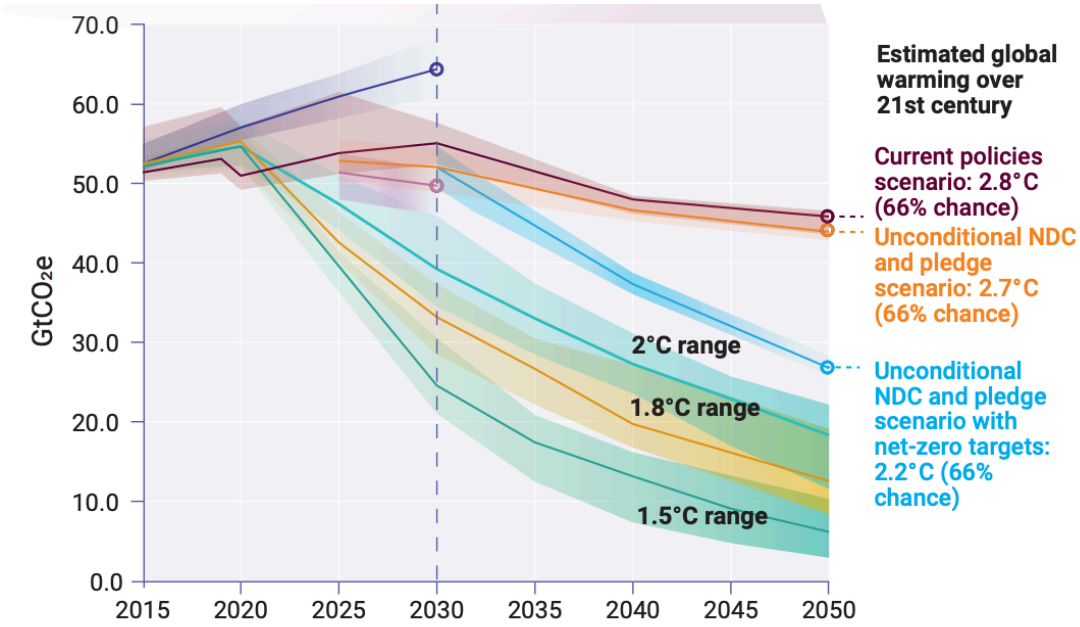
How much progress are we making under the Paris Agreement?

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 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).

[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"
[10] Climate Watch, "Historical GHG Emissions"
[11] Climate Watch, "Net-Zero Tracker" (as of October 25, 2021)

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]

[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 ℃ (3.6 ℉)	*Gap to below 1.5 ℃ (2.7 ℉)*
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

[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"

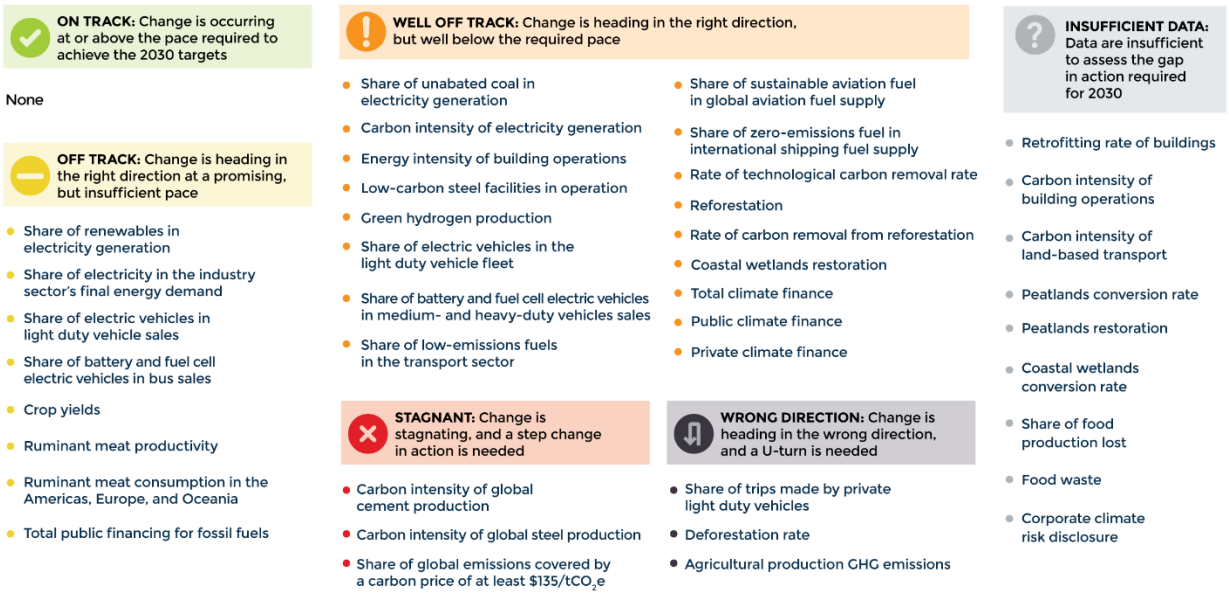
[18] Lu, Xue, and Zhou, "How Did Shenzhen, China Build World's Largest Electric Bus Fleet?"

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 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."

[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."

[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"

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 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.

[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.

[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"

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 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.

[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"

[35] Saha and Jaeger, "Ranking 41 US States Decoupling Emissions and GDP Growth"

[36] DOE, NASEO, EFI, and BW, "United States Energy & Employment Report 2021"

[37] Jaeger et al, "The Green Jobs Advantage: How Climate-Friendly Investments Are Better Job Creators"

[38] Ray et al, "Do Not Revive Coal: Planned Asia Coal Plants a Danger to Paris"

[39] Sims et al, "Put Gas on Standby."

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.

Sources

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. Weiss, L. Lazer, L. Jeffery, L. Freehafer, E. Gray, L. Zhou, M. Gidden, and M. Gavin. "State of Climate Action 2021: Systems Transformations Required to Limit Global Warming to 1.5°C." Washington, DC: *World Resources Institute*, 2021. https://www.wri.org/research/state-climate-action-2021.

Climate Watch. "2020 NDC Enhancements Tracker." *World Resources Institute*. Accessed October 25, 2021. https://www.climatewatchdata.org/2020-ndc-tracker.

Climate Watch. "Historical GHG Emissions." *World Resources Institute*. Accessed October 25, 2021. https://www.climatewatchdata.org/ghg-emissions.

Climate Watch. "Net-Zero Tracker." *World Resources Institute*. Accessed October 25, 2021. https://www.climatewatchdata.org/net-zero-tracker.

Council of the EU and European Council. "Climate Finance: EU and Member States' Contributions Continued to Increase in 2019." 2020. *Council of the EU and European Council*. https://www.consilium.europa.eu/en/press/press-releases/2020/10/29/climate-finance-eu-and-member-states-contributions-continued-to-increase-in-2019/.

DOE, NASEO, EFI, and BW (U.S. Department of Energy, National Association of State Energy Officials, Energy Futures Initiative, and BW Research Partnership, Inc). "United States Energy & Employment Report 2021." *U.S. Department of Energy*, 2021. https://www.energy.gov/us-energy-employment-jobs-report-useer.

Energy Policy Tracker. "United States." *International Institute for Sustainable Development*. Accessed October 25, 2021. https://www.energypolicytracker.org/country/united-states/.

Eskander, Shaikh M. S. U., and Sam Fankhauser. "Reduction in Greenhouse Gas Emissions from National Climate Legislation." *Nature Climate Change* 10, no. 8 (August 2020): 750–56. https://doi.org/10.1038/s41558-020-0831-z.

Fischer, Maximilian, Nicolaas Kramer, Inga Maurer, and Rachel Mickelson. "A Turning Point for US Auto

[40] The White House, "Executive Order on Tackling the Climate Crisis at Home and Abroad"

Dealers: The Unstoppable Electric Car." *McKinsey & Company*, 2021. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/a-turning-point-for-us-auto-dealers-the-unstoppable-electric-car.

Frankfurt School-UNEP Centre and BNEF (Bloomberg New Energy Finance). "Global Trends in Renewable Energy Investment 2020." Frankfurt: *Frankfurt School-UNEP Centre*, 2020. https://www.fs-unep-centre.org/global-trends-in-renewable-energy-investment-2020/.

Hsiang, Solomon, Robert Kopp, Amir Jina, James Rising, Michael Delgado, Shashank Mohan, D. J. Rasmussen, et al. "Estimating Economic Damage from Climate Change in the United States." *Science* 356, no. 6345 (June 30, 2017): 1362–69. https://doi.org/10.1126/science.aal4369.

IEA, IRENA, UNSD, WB, and WHO (International Energy Agency, International Renewable Energy Agency, United Nations Statistics Division, World Bank, World Health Organization). "Tracking SDG 7: The Energy Progress Report 2021." Washington, DC: *World Bank*, 2021. https://www.irena.org/publications/2021/Jun/Tracking-SDG-7-2021.

IFC (International Finance Corporation). "Climate Investment Opportunities in Emerging Markets: An IFC Analysis." Washington, DC: *International Finance Corporation*, 2016. 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.

Jaeger, Joel, Ginette Walls, Ella Clarke, Juan-Carlos Altamirano, Arya Harsono, Helen Mountford, Sharan Burrow, Samantha Smith, and Alison Tate. "The Green Jobs Advantage: How Climate-Friendly Investments Are Better Job Creators." *World Resources Institute*, 2021. https://www.wri.org/research/green-jobs-advantage-how-climate-friendly-investments-are-better-job-creators.

Kennedy, K., W. Jaglom, N. Hultman, E. Bridgwater, R. Mendell, H. Leslie-Bole, L. Rowland, E. McGlynn, T. Massey-Green, T. Cyrs, L. Clarke, H. McJeon, A. Zhao, J. O'Neill, R. Gasper, J. Feldmann, K. O'Keefe, S. Kennedy, J. Zhao, and H. Kazanecki. "Blueprint 2030: An All-In Climate Strategy for Faster, More Durable Emissions Reductions." *America Is All In*, 2021. https://www.americaisallin.com/blueprint-2030.

Larsen, John, Ben King, Emily Wimberger, Hannah Pitt, Hannah Kolus, Alfredo Rivera, Naveen Dasari, Claire Jahns, Kate Larsen, and Whitney Herndon. "Pathways to Paris: A Policy Assessment of the 2030 US Climate Target." *Rhodium Group*, 2021. https://rhg.com/research/us-climate-policy-2030/.

Lu, Lu, Lulu Xue, and Weimin Zhou. "How Did Shenzhen, China Build World's Largest Electric Bus Fleet?" *World Resources Institute*, 2018. https://www.wri.org/insights/how-did-shenzhen-china-build-worlds-largest-electric-bus-fleet.

McDonald, J. "China to Ban Petrol and Diesel Cars, State Media Reports." *The Independent*, 2017. https://www.independent.co.uk/news/world/asia/china-petrol-diesel-car-ban-gasoline-production-sales-electric-cabinet-official-state-media-a7938726.html.

McLaughlin, Katrina, and Lori Bird. "The US Set a Record for Renewables in 2020, but More Is Needed," *World Resources Institute*, 2021. https://www.wri.org/insights/renewable-energy-2020-record-us.

Meyer, Amy, and Leo Menninger. "6 Ways to Prevent Greenwashing and Risks from Trade Associations." *World Resources Institute*, 2021. https://www.wri.org/insights/how-businesses-mitigate-risk-greenwashing-trade-associations-us.

Mountford, Helen. "STATEMENT: US Announces New Finance Pledge for Developing Country Climate Action." *World Resources Institute*, 2021. https://www.wri.org/news/statement-us-announces-new-finance-pledge-developing-country-climate-action.

Mulligan, James, Giana Amador, and Noah Deich. 2018. "Wanted: $325 Million for Federal R&D to Jumpstart Carbon Removal." *World Resources Institute*. https://www.wri.org/insights/wanted-325-million-federal-rd-jumpstart-carbon-removal.

"PM's Remarks at Climate Action Summit 2019 during 74th Session of UNGA." *Narendra Modi*, 2019. https://www.narendramodi.in/pm-modi-s-remarks-at-summit-on-climate-change-546575.

Ray, Lee, Catharina Hillenbrand von der Neyen, Durand D'souza, Valeria Ehrenheim, Lily Chau, Nicolás Gonzalez, Lorenzo Sani, and Aurore Le Galiot. "Do Not Revive Coal: Planned Asia Coal Plants a Danger to Paris." *Carbon Tracker*, 2021. https://carbontracker.org/reports/do-not-revive-coal/.

Reidmiller, David R., Christopher W. Avery, David R. Easterling, Kenneth E. Kunkel, Kristin L.M. Lewis, Thomas K.

Maycock, and Brooke C. Stewart. “Impacts, Risks, and Adaptation in the United States: The Fourth National Climate Assessment, Volume II.” *U.S. Global Change Research Program*, 2018. https://doi.org/10.7930/NCA4.2018.

Reuters Staff. “China Targets 35 Million Vehicle Sales by 2025, NEVs to Make up One-Fifth.” *Reuters*, 2017. https://www.reuters.com/article/us-china-autos-electric-idUSKBN17R086.

Saha, Devashree, and Joel Jaeger. “America’s New Climate Economy: A Comprehensive Guide to the Economic Benefits of Climate Policy in the United States.” *World Resource Institute*, 2020. https://www.wri.org/research/americas-new-climate-economy-comprehensive-guide-economic-benefits-climate-policy-united.

Saha, Devashree, and Joel Jaeger. “Ranking 41 US States Decoupling Emissions and GDP Growth,” *World Resources Institute*, 2020. https://www.wri.org/insights/ranking-41-us-states-decoupling-emissions-and-gdp-growth.

Sims, Jonathan, Catharina Hillenbrand von der Neyen, Durand D‘souza, Lily Chau, Nicolás González-Jiménez, and Lorenzo Sani. “Put Gas on Standby.” *Carbon Tracker*, 2021. https://carbontracker.org/reports/put-gas-on-standby/.

Thwaites, Joe. “4 Climate Finance Priorities for the Biden Administration.” *World Resources Institute*, 2021. https://www.wri.org/insights/4-climate-finance-priorities-biden-administration.

Thwaites, Joe. “US Climate Finance: A Great Deal for the Nation and the World.” *World Resources Institute*, 2021. https://www.wri.org/insights/us-climate-finance-great-deal-nation-and-world.

UNEP (United Nations Environment Programme). “Emissions Gap Report 2014.” Nairobi: *UNEP*, 2014. https://www.unep.org/resources/emissions-gap-report-2014.

UNEP (United Nations Environment Programme). “Emissions Gap Report 2021.” Nairobi: *UNEP*, 2021. https://www.unep.org/resources/emissions-gap-report-2021.

The White House. “Executive Order on Tackling the Climate Crisis at Home and Abroad.” *The White House*, 2021. https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/.