The Case for

An Executive Order And Global Action

To Assess, Develop and Deploy

Greenhouse Gas Removal Technologies

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We provide below a summary of some of the recent findings on negative emissions technologies (NETs) and active removal technologies. This summary also introduces the rationale for an Executive Order on GHG removal and a Global Agreement on Methane. The paper at some points addresses the President, as a briefing would, since these would be his executive order and his global initiative.

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In the days leading up to the gathering of heads of state convened on Earth Day 2021 by President Joe Biden to consider cooperative action on climate change, thirty of the world's leading scientists with expertise ranging from climate science and atmospheric chemistry to conservation biology **signed a letter urging national and global leaders to:**

1) ensure that all countries are committed to aggressively reducing or mitigating methane emissions at their sources;

2) fund and initiate programs to monitor atmospheric methane and to research and develop technologies that reduce atmospheric methane safely and effectively; and

3) frame and implement a global agreement to return atmospheric methane concentrations to preindustrial levels.

Methane Action, a new organization, and other nonprofit, public interest organizations with expertise in climate solutions wrote President Biden midday on Friday, April 16th to convey the scientists' letter and related materials saying:

We are writing to ask you to consider an executive order that builds on your Order of January 27, 2021. Informed by the advice of our legal and scientific colleagues, including some who have served in the federal government, this proposed new order would draw on presidential powers to expedite a research agenda for developing and deploying ways to remove excess greenhouse gases (GHGs) from the atmosphere, including legacy carbon dioxide (CO_2) and short lived climate pollutants (SLCPs), particularly methane.

Methane Action, in consultation with allies and scientific and legal experts around the world, developed and made available two potentially powerful legal tools for this effort:

First, for the Biden Administration, a draft Executive Order On Restoring a Safe and Healthy Climate adding the development of pollution removal methods to the actions mandated by his initial Executive Order on reducing greenhouse gas emissions.

And second, a Global Methane Agreement that could be implemented now by most countries, using their authorities in accordance with existing international law.

We set out below a summary of the need for and benefits of these actions.

Scientists Warn of Climate Emergency, and that Damage Being Done by Methane and Other Powerful Short Lived Climate Pollutants Is Underestimated

In 2014 Stuart Chapin, Michael Mann, Michael MacCracken and nearly twenty other leading climate scientists wrote to John Holdren and other Obama Administration climate experts recommending a two track GHG reduction policy focusing on methane and other SLCPs on the fast track or near term:

> As evidence continues to mount that serious climate change impacts are already upon us, 13 research indicates that mitigation of short-lived pollutants such as methane can play a significant role in slowing the rate of climate change, while producing many co-benefits for human health and food security.14 To support the accurate evaluation of the benefits of methane mitigation, the Administration and agencies should develop a two-track strategy directed at limiting both long-term warming and the near-term rate of warming.[1]

The "World Scientists' Warning of a Climate Emergency of 2019," signed by over 11,000 scientists, advised policy makers that they should pursue negative emissions technologies in conjunction with other measures. The statement also urged prompt reduction of short-lived climate pollutants.[2]

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[1] July 29, 2014 letter to John Holdren, Director, Office of Science and Technology Policy, et al. by F. Stuart Chapin, Michael Mann, et al.

[2] William J Ripple et al., "World Scientists' Warning of a Climate Emergency," BioScience 70, no. 1 (November 5, 2019): pp. 8-12, https://doi.org/10.1093/biosci/biz088.

We Can Remove Climate Pollutants and Excess Heat Without Resorting to Risky Geoengineering

Methods of reducing global warming that go beyond reducing GHG emissions often bring to mind rather radical forms of geoengineering such as Solar Radiation Management which does not reduce the build up of climate pollutants but redirects the sun's energy before it affects the earth's temperature. Such measures can have negative consequences such as reducing the natural growth of plants.[3] Thus the National Academy of Science and many other scientists including those contributing to this paper and its attachments have focused first on the less risky forms of mitigating climate change beyond emissions reductions.

National Academy of Science Calls for Substantial Investment for Rapid Progress on Negative Emissions Technologies

In 2019 the National Academy of Science, Engineering and Medicine developed a research agenda for six terrestrial and near shore "negative emissions technologies" (NET) to remove excess carbon dioxide from the atmosphere. Its consensus report[4] determined that those six methods appeared viable and merit further research, development and deployment. The NAS also noted the limited scope of its work and recommended launching a substantial initiative as soon as possible encompassing those and other methods:

> …The exclusive focus of this report on terrestrial and near-shore coastal NETs reflects the Statement of Task. The committee recognizes that oceanic options for CO2 removal and sequestration (e.g., iron fertilization and ocean alkalinization), which fall outside the scope of its task, could sequester an enormous amount of CO2 and that the United States needs a research strategy to address them.[5]

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[3] While any ambitious new method must first be carefully assessed for its environmental impacts, the following article reviews the risks of several geoengineering methods such as Solar Radiation Management and proposes some methods that offer few risks and more benefits – Tingzhen Ming et al., "Fighting Global Warming by Climate Engineering: Is the Earth Radiation Management and the Solar Radiation Management Any Option for Fighting Climate Change?," Renewable and Sustainable Energy Reviews 31 (March 2014): pp. 792-834, https://doi.org/10.1016/j.rser.2013.12.032.
– https://www.sciencedirect.com/science/article/pii/S1364032113008460

[4] National Academies of Science, Engineering, and Medicine, "Negative Emissions Technologies and Reliable Sequestration: A Research Agenda," *The National Academic Press*, 2019, https://doi.org/10.17226/25259.

[5] National Academies of Science, Engineering, and Medicine. "Negative Emissions Technologies and Reliable Sequestration: A Research Agenda." *The National Academic Press*, 2019, 5. https://doi.org/10.17226/25259.

<u>Recommendation</u>: The nation should launch a substantial research initiative to advance negative emissions technologies (NETs) as soon as practicable. A substantial investment would (1) improve existing NETs (i.e., coastal blue carbon, afforestation/reforestation, changes in forest management, uptake and storage by agricultural soils, and bioenergy with carbon capture and sequestration) to increase the capacity and to reduce their negative impacts and costs; (2) make rapid progress on direct air capture and carbon mineralization technologies, which are underexplored, but would have essentially unlimited capacity if the high costs[6] and many unknowns could be overcome; and (3) advance NET-enabling research on biofuels and carbon sequestration that should be undertaken anyway as part of an emissions mitigation research portfolio.[7]

While this work was underway, NASA's former top climate scientist Dr. James Hansen and many others (including his coauthors of the studies listed in the footnotes below) continued to advance our understanding of the potential climate, agricultural and ecological benefits of NETs when used in the right context.

For example, combining enhanced rock weathering (EW) and remineralization with a regenerative (biological) agriculture model, including adding rock dusts and biochar as an alternative to conventional chemical fertilizer enhances carbon sequestration in soils.[8] It also yields synergistic enhancements of soil and food security[9] while providing (EW) the base cations (positively charged minerals) needed to mitigate climate change.[10] Downstream, this process buffers the oceans, mitigating a significant

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[6] Direct air capture is expensive, but the cost of rock dust for carbon capture is on par with other strategies.

[7] National Academies of Science, Engineering, and Medicine. "Negative Emissions Technologies and Reliable Sequestration: A Research Agenda." *The National Academic Press*, 2019, 20. https://doi.org/10.17226/25259.

[8] David J. Beerling et al., "Publisher Correction: Farming with Crops and Rocks to Address Global Climate, Food and Soil Security," *Nature Plants* 4, no. 6 (2018): pp. 138-147, https://doi.org/10.1038/s41477-018-0162-5.

[9] Ibid.

[10] David Lefebvre et al., "Assessing the Potential of Soil Carbonation and Enhanced Weathering through Life Cycle Assessment: A Case Study for Sao Paulo State, Brazil," *Journal of Cleaner Production* 233 (2019): pp. 468-481, https://doi.org/10.1016/j.jclepro.2019.06.099.
Our recommendation to conduct broad scope environmental assessments is intended to address such questions in order to sort out which techniques to use where. The first two paragraphs of Lefebvre's Introduction follow: "**1. Introduction:** Scientists agree that, by 2100, the annual extraction of an average of 3.3 Gt of carbon equivalent per year (>12 Gt carbon dioxide equivalent [CO2eq] per year) from the atmosphere will be necessary to limit the increase in global average temperature to 2 °C relative to pre-industrial levels (Fuss et al., 2014; Smith et al., 2016; Williamson, 2016). To mitigate this, it is not only necessary to prevent greenhouse gas (GHG) emissions, but also to remove GHG from the atmosphere. A greenhouse gas removal technology (GGRT) or negative emission technology is one capable of removing GHG from the atmosphere (EASAC, 2018; Fuss et al., 2018; Williamson, 2016; Williamson and Bodle, 2016). Enhanced weathering (EW) has received increasing interest in the past few years (Martin, 2017; Renforth et al., 2011); its global potential has been addressed by Beerling et al. (2018). It is defined as the *"process by which CO2 is sequestered from the atmosphere through the dissolution of silicate minerals on the land surface"* (Renforth, 2012) and is regarded as a potential GGRT. Similarly, carbonation is a process where the formation of carbonate minerals in soils is promoted artificially, mimicking natural pedogenic carbonate formation to produce a measurable permanent sink for atmospheric CO2 (Kolosz et al., 2019; Manning et al., 2013; Washbourne et al., 2015)."

result of excess carbon dioxide: ocean acidification and its degradation of marine life.[11]

ARPA-E Requests Information on Methane Removal

In September 2020, the Department of Energy's Advanced Research Projects Agency (ARPA-E) issued a Request for Information on methods of reversing the rate of accumulation of methane in the atmosphere, including at least two technologies for removing methane from it.[12] The DOE Request for Information reflected dozens of peer reviewed studies indicating the viability of accelerating natural processes to remove methane and other potent climate forcing agents. It's urgent to expedite this work, since atmospheric methane concentrations have risen sharply since 2007, and stand now at between 2 and 2.5 times pre-industrial levels. (See Barrow Island Observatory's chart of rising methane levels as of December 13, 2020.[13]) Thus, methane and other significant SLCPs should have high priority in research, development and deployment of NETs.[14]

Unfortunately, European scientists do not generally keep track of ARPA-E notices for they cannot be the principal investigators under ARPA-E grants, which require U.S. scientists in that role. ARPA-E therefore seems to have missed much of the related peer reviewed scholarship in this area over the past decade or so. For example, ARPA–E may have been unaware of the 2011 article in the Journal of Photochemistry and Photobiology that demonstrated how light combined with catalysts can remove most GHGs, tropospheric ozone, and black soot:

The potential applications of photocatalysis, to remove or mitigate a wide range of global warming contributors from the atmosphere, seem an attractive method to help fight climate change. By harnessing solar energy, photocatalytic processes consume less energy than conventional methods. This review article shows that photocatalysis may be applied successfully to eliminate or transform all major long-lived, well-mixed greenhouse gases, but also soot and tropospheric ozone and other short-lived climate forcers.[15]

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[11] Lyla L. Taylor et al., "Enhanced Weathering Strategies for Stabilizing Climate and Averting Ocean Acidification," *Nature Climate Change* 6, no. 4 (2015): pp. 402-406, https://doi.org/10.1038/nclimate2882.

[12] "The proposed REMEDY (Reducing Emissions of Methane Every Day of the Year) program is focused on technologies to prevent and/or abate methane emissions. The goal is to reverse the rate of accumulation of methane in the atmosphere, resulting in a decrease in atmospheric methane concentration. ARPA-E is seeking transformative and disruptive technologies that could: (a) prevent methane emissions from anthropogenic activities; (b) abate methane emissions at the source (stack, vents, leaks, etc.); and (c) remove methane from the air." – A summary of a talk by Jack Lewnard of ARPA-E hosted by NASA (https://carbon.nasa.gov/docs/October%202020%20PSS%20Talk%20Announcement.pdf)

[13] NOAA Earth System Research Laboratories Global Monitoring Laboratory , n.d.

[14] See Franz Dietrich Oeste et al., "Climate Engineering by Mimicking Natural Dust Climate Control: the Iron Salt Aerosol Method," *Earth System Dynamics* 8, no. 1 (2017): pp. 1-54, https://doi.org/10.5194/esd-8-1-2017 for a summary by Oeste and Elsworth of some of the most important peer reviewed studies of potential technologies for the removal of methane and other climate forcing agents.

[15] Renaud de_Richter and Sylvain Caillol, "Fighting Global Warming: The Potential of Photocatalysis against CO2, CH4, N2O, CFCs, Tropospheric O3, BC and Other Major Contributors to Climate Change," Journal of Photochemistry and Photobiology C: Photochemistry Reviews 12, no. 1 (2011): pp. 1-19, https://doi.org/10.1016/j.jphotochemrev.2011.05.002.

The omnibus stimulus package of December 2020 combined climate pollution abatement and active removal. It included both the Kigali Protocol schedule for reducing HFC emissions and $4 billion for carbon capture and storage and removal and $2 billion for carbon removal technologies. It also extended DOE/ARPA-E's authority formally to include removal technologies not directly related to energy.

In its first Funding Opportunity Announcement of 2021, ARPA-E announced that it expects to make approximately $100 million available for new awards. In another FOA on April 8, 2021 ARPA-E announced $35 million would be available for the development of technologies for three kinds of methane *emissions reduction.* There is no mention in either FOA of funding for *active removal* of GHGs other than carbon dioxide. Yet it's urgent to advance removal of SLPCs, especially methane. Record atmospheric methane concentration is already causing a quarter of the global warming we are experiencing today or more and its presence in the atmosphere is at least twice the historic norm and rising rapidly.[16,17]

Upcoming New Regulations on Methane Offer the Opportunity to Require Methane and Other SLCP Removal as Techniques Come On Line

Efforts to aggressively regulate and reduce methane emissions at the source are indispensable. Yet it is highly likely that reducing these emissions won't be enough to bring atmospheric concentrations of methane to safe levels, because without help from humans, nature's process of removing methane can no longer keep up with the increasing rate of methane emissions. Therefore, in order to be ready to deploy tools to remove methane and other GHGs, you should order your agencies to complete the development of the most promising technologies and begin to do so now.

In recent years numerous peer-reviewed studies[18] have laid the scientific foundation for active removal of methane and other climate forcing agents from the atmosphere using various removal methods, such as adding relatively small amounts of iron into the lower atmosphere (troposphere). Methods of enhancing atmospheric methane oxidation often mimic or enhance naturally occurring methane oxidation processes. For example, under sunlit conditions, iron from desert dust can break atmospheric methane down chemically, destroying its heat-trapping properties. This process can be enhanced by gently introducing additional particles over ocean waters.[19]

Renaud de Richter et al. described one such process in 2017 that uses the

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[16] See: https://www.esrl.noaa.gov/gmd/ccgg/trends_ch4/

[17] As emissions of nitrous oxide are also, see https://www.esrl.noaa.gov/gmd/ccgg/trends_n2o/

[18] See Franz Dietrich Oeste et al., "Climate Engineering by Mimicking Natural Dust Climate Control: the Iron Salt Aerosol Method," *Earth System Dynamics* 8, no. 1 (2017): pp. 1-54, https://doi.org/10.5194/esd-8-1-2017.

[19] The main product or result of the reaction is water at lower levels of the troposphere, where it is much less harmful, and a relatively tiny amount of carbon dioxide, which, as noted above, is from 84 to 105 times weaker as a warming agent than methane over the twenty years in which methane can remain active.

interaction of light and semiconductor materials, called photocatalysts, as follows:

> Large-scale atmospheric removal of greenhouse gases (GHGs) including methane, nitrous oxide and ozone-depleting halocarbons could reduce global warming more quickly than atmospheric removal of CO_2. Photocatalysis of methane oxidizes it to CO_2, effectively reducing its global warming potential (GWP) by at least 90%. Nitrous oxide can be reduced to nitrogen and oxygen by photocatalysis; meanwhile halocarbons can be mineralized by redox photocatalytic reactions to acid halides and CO_2. Photocatalysis avoids the need for capture and sequestration of these atmospheric components.[20]

Working With Nature Can Remove GHGs, Boost Long Term Productivity, and Restore Climate and Ecosystem Health

Some NETs and GHG removal methods use simple alterations of agricultural practices or other low-tech methods to sequester carbon and/or reduce methane. These include switching from plowing to a combination of cover crops and "no-till" agriculture[21] and carefully rotating livestock grazing so as to help the soil reduce the release of greenhouse gases.[22]

Many methods of removing, converting and sequestering methane and other climate forcing agents, such as nitrous oxides, also have significant co-benefits. For example, since methane is a component of ground level ozone, removing it can reduce smog, improving public health. Research over the past several years indicates that removing methane from the atmosphere also helps protect the stratospheric ozone layer that shields us against damaging solar radiation,[23] since it involves oxidizing the methane before it reaches the stratosphere, where it would otherwise catalyze ozone layer depletion.

Numerous papers have now also demonstrated that the most recent ice age was made colder in part by the large amounts of iron-rich dust carved off the land by glaciers and blown out to sea feeding phytoplankton and ultimately cooling the seas, making them capable of absorbing more carbon and feeding a cooling cycle, drawing down

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[20] Renaud de_Richter et al., "Removal of Non-CO 2 Greenhouse Gases by Large-Scale Atmospheric Solar Photocatalysis," Progress in Energy and Combustion Science 60 (2017): pp. 68-96, https://doi.org/10.1016/j.pecs.2017.01.001.

[21] "Cover crops combined with no-tillage systems can increase soil organic carbon, which could help slow climate change." "The researchers' findings were published in the academic journal Agricultural and Forest Meteorology and are available online at https://doi.org/10.1016/j.agrformet.2020.108090."

[22] For example, "We conclude that AMP grazing has the potential to mitigate the impact of a warmer soil on GHG emissions by consuming more CH4 compared to non-AMP grazing in northern temperate grasslands, presumably by altering biogeochemical properties and processes." https://www.mdpi.com/2073-4395/10/11/1781, Bharat M. Shrestha et al., "Adaptive Multi-Paddock Grazing Lowers Soil Greenhouse Gas Emission Potential by Altering Extracellular Enzyme Activity," *Agronomy* 10, no. 11 (2020): p. 1781, https://doi.org/10.3390/agronomy10111781.

[23] See "How Iron Salt Aerosol strengthens the ozone layer," by Franz Oeste, Renaud de Richter, and Clive Elsworth. Dec 2020.

atmospheric temperatures.[24] Iron has now been found to be at such low levels as to limit the growth of ocean, plant, and animal life.[25]

Likewise, the restoration of terrestrial forests, kelp forest, and marine wildlife can greatly reduce climate change and provide an economic return that is estimated at $10 trillion.[26] Studies of the role of the ocean's food chain from the great whales down to phytoplankton have shown that the loss of 70-90% of the great whales from whaling and other human activities removed not only their ability to store carbon but the iron that these whales once deposited in their waste. The loss of that iron has reduced the phytoplankton that forms the basis of almost the entire ocean food chain and its carbon sequestration services.[27]

None other than the International Monetary Fund has determined that:

> If whales were allowed to return to their pre-whaling number of 4 to 5 million—from slightly more than 1.3 million today—it could add significantly to the amount of phytoplankton in the oceans and to the carbon they capture each year. At a minimum, even a 1 percent increase in phytoplankton productivity thanks to whale activity would capture hundreds of millions of tons of additional CO_2 a year, equivalent to the sudden appearance of 2 billion mature trees. Imagine the impact over the average lifespan of a whale, more than 60 years.[28]

Removing most of the great whales also forced killer whales to eat more sea otters which led to the loss of kelp forests as the abalone prey of sea otters multiplied and thinned kelp forests.[29] The International Monetary Fund found in 2019 that the average great whale's climate benefit is worth $2 million and the entire stock is worth over one trillion dollars in climate impact alone. That led the IMF to conclude "that whale protection must now become a top priority in the global effort to tackle climate change."[30]

The IMF has found that forest elephants play a similar role in allowing their ecosystems to remove GHGs from the atmosphere and provide carbon-capture services

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[24] See, e.g., Iron and Ice – How Iron Cooled the Earth 20,000 Years Ago – https://medium.com/earthsphere/iron-and-ice-5e84f275d3f7. This article cites several peer-reviewed papers.
[25] Science News – Iron deficiency restrains marine microbes – Scientists discover important process in the nutrient cycles of the tropical North Atlantic, May 19, 2017, Helmholtz Centre for Ocean Research Kiel (GEOMAR) *Summary:* Iron is a critical nutrient in the ocean. Its importance for algae and the nitrogen cycle has already been investigated in detail. Now a new discovery shows that microbes also need iron to process phosphorus. A team of researchers has completed a study showing that iron can limit phosphorus acquisition in the ocean.
[26] See https://climategamechangers.org/game-changers/climate-restoration/marine-permaculture-arrays/
[27] Ralph Chami, "Nature's Solution to Climate Change – IMF F&D," Nature's Solution to Climate Change – IMF F&D, December 2019, https://www.imf.org/external/pubs/ft/fandd/2019/12/natures-solution-to-climate-change-chami.htm.
[28] Ibid. –
[29] See, e.g. Sophie Yeo, "How Whales Help Cool the Earth," BBC Future (BBC, January 19, 2021), https://www.bbc.com/future/article/20210119-why-saving-whales-can-help-fight-climate-change. and Andrew J. Pershing et al., "The Impact of Whaling on the Ocean Carbon Cycle: Why Bigger Was Better," *PLoS ONE* 5, no. 8 (2010), https://doi.org/10.1371/journal.pone.0012444.
[30] Yeo, note 10.

valued at over $150 billion.[31]

Therefore, the E.O. we suggest, and one draft we have prepared, sets out a testing schedule that includes the assessment of the direct effects of climate restoration methods on wildlife as well as the atmosphere and instructs the U.S. agencies involved in protecting and restoring whales and elephants to work with other countries and the relevant international agreements to enhance the recovery of these species and the ecosystems on which they depend.

In light of the documented need to begin to remove GHGs now and the several international meetings coming up this year – this memo will henceforth be addressing the President, as a briefing would.

We write to urge you, the President, to sign an Executive Order bringing your full powers to bear to greatly expedite further research, development and deployment of NETs for GHGs including SLCPs, especially methane, both in the U.S. and in partnership with other nations and international bodies.

An Executive Order Could Selectively Use Emergency Production Powers And Assess All Practicable Options

Such an E.O. would invoke such specific emergency powers as you determine are necessary while ensuring that the civil and human rights and due process of all natural persons will not be set aside or reduced in the process.

It would set forth a process for testing, publicly assessing, and implementing those approaches that are shown to have the greatest potential for efficiently and safely removing climate pollutants from the atmosphere. It would use the power available to you under existing law, beginning with funding already authorized and appropriated, but directing your agencies to identify additional authority and appropriations that are essential for this work.

The Order would stipulate that any and all removal methods undergo an appropriate level of environmental assessment. In this regard programmatic environmental impact statements may be the most effective vehicles for informing the agencies and the public around the world and receiving comments from them in order to synchronize our work with that of the international bodies charged with protecting earth's living natural resources. Such an assessment, programmatic impact statement or other evaluation should also include or address the question of how some of the techniques to combat global warming might interfere with rather than assist nature's processes for removing GHGs or run the risk of being harder to control or reverse.

Your Order Would Prepare an International Version of the

[31] "Small Elephants Play Big Role in Fighting Climate Change," International Monetary Fund (IMF, September 21, 2020), https://www.imf.org/en/News/Podcasts/All-Podcasts/2020/09/21/Elephants.

"whole-of-government" approach as you expand the Circle of Climate Cooperation

The Order would also propose an international version of your "whole-of-government" approach – working with other governments and international institutions to address the climate crisis as a global partnership for climate security. Whereas the General Agreement on Tariffs and Trade (GATT), for example, has to date treated public health and the environment as exceptions to the general rules of trade, the World Trade Organization (WTO) must now treat protecting public health and the environment, including a healthy climate, as prerequisites for a productive economy.[32]

Likewise, the United Nations has recognized in its 75th year that it too needs to be updated and the Stimson Center has been coordinating a broad effort to move that process along for many months now. Climate is at the center of the Secretary General's concerns as well.

The WTO plans to initiate administrative reforms this year at its Ministerial Meeting. Special Envoy Kerry can help lead the UN Framework Convention on Climate Change to adopt protocols and resolutions for more robust climate health protection at the 2021 Conference of the Parties in Glasgow and the preparatory meeting leading up to it. These meetings and the April 22 Climate Leaders' Summit will present opportunities for working with other governments and international bodies to elevate GHG removal as part of an integrated global strategy to rapidly reduce GHGs to more manageable levels.

Beyond climate-specific agreements, the co-benefits of active GHG removal and the need to integrate removal efforts with international law to ensure they are undertaken in a responsible manner place GHG removal within the scope of other international agreements already in force, such as conservation and pollution prevention treaties and trade agreements.

The Order we suggest would direct your Special Envoy and Secretary of State and their teams to develop proposals to weave a global climate plan invoking both climate specific agreements and several others. For example, over 190 nations have under Article 8 of the Convention on Biological Diversity the duty to restore degraded ecosystems and to control activities that harm biodiversity.[33] Although it is not a party, the U.S. always sends large delegations to the Conference of the Parties of that treaty and works through other delegations to influence their work to implement it. The draft Order also directs your Envoy and Secretary of State to work with the London and Vienna Conventions and their protocols, including their enforcement mechanisms for

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[32] Public health and natural resource conservation are two exceptions in the General Agreement on Tariffs and Trade that allow countries to prevent substandard production methods abroad from undercutting their domestic conservation and health requirements, but only if nations can show that their tariffs or embargoes fall within those exceptions and give fair notice, due process and support international agreements to protect the resource at issue Shrimp and Sea Turtle WTO Appellate Panel Decision of 2001 – https://ustr.gov/archive/Document_Library/Press_Releases/2001/October/US_Wins_WTO_Case_on_Sea_Turtle_Conservation.html.

[33] Although it is not one of the more than 190 nations that are parties, the U.S. has sent large delegations to virtually every major meeting of the CBD and its subsidiary bodies since its negotiation and inception in 1992.

protecting the high seas and the stratospheric ozone layer from pollutants that also drive climate change.

Methane Action has made available to your team by email a short draft Global Methane Agreement in which heads of state would agree to use their existing executive authorities and their established powers under international law to work together to reduce and remove methane to restore that powerful greenhouse gas to healthy levels once again.