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#### Innovation is high now

Kenan 6-9, The Frank Hawkins Kenan Institute of Private Enterprise develops and promotes innovative, market-based solutions to vital economic issues. With the belief that private enterprise is the cornerstone of a prosperous and free society, the institute fosters the entrepreneurial spirit to stimulate economic prosperity and improve the lives of people in North Carolina, across the country and around the world. Kenan Institute, 6-9-21, “Turbocharging Healthcare Innovation” <https://kenaninstitute.unc.edu/kenan-insight/turbocharging-healthcare-innovation/> brett

As COVID-19 began to spread around the globe, companies and entrepreneurs stepped up to develop new technologies and redeploy existing technologies in their portfolio to tackle the disease and cope with the constraints it brought. The pandemic forced telemedicine into the mainstream and brought mRNA vaccine technology to the forefront. At the same time, new technologies such as CRISPR gene editing and artificial intelligence (AI) approaches have been finding their niche for speeding up drug discovery and development.

Healthcare innovation was already on the fast train before the pandemic. Now, it’s been turbocharged. In this Kenan Insight, we explore why the 2021 Trends in Entrepreneurship Report names emerging technology in the healthcare industry as a key trend for entrepreneurship, along with some of the challenges that come with fast-moving technology advances.

A trajectory of explosive growth

The healthcare industry has experienced extraordinary growth over the past four decades. Big pharma is driving much of this boom, accounting for 10% of the U.S. economy’s overall R&D spending at the end of 2020.1 The medical device industry, expected to generate $54.5 billion over the next four years, is another important player.2 This growth is catching the attention of investors. In 2020, health tech startups raised approximately $14 billion in venture capital funding, nearly double that of 2019.3 CB Insights estimates there are now 51 healthcare unicorns, defined as startups valued at $1 billion or more.

Health-tech venture funding reached record levels in 2020

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Source: Deloitte analysis of Rock Health’s Digital Health Funding Database

Innovation is a critical driver in the healthcare sector. Increasing rates of innovation can be seen in the sharp rise of U.S. patents granted for pharmaceuticals and medical devices in recent years. Between 2013 and 2019, more than 60,000 pharmaceutical patents and more than 125,000 medical device patents were granted.4 Today, there are more than 18,500 drugs at various stages of the development process worldwide.5

Maturing technologies

The increasing numbers of patent applications, clinical trials and collaborations are leading indicators of a vibrant and growing biopharmaceutical ecosystem. However, the proliferation of innovation tools, rather than just innovative products, is what will allow the next generation of pharmaceutical drugs to be discovered more quickly and more efficiently, to provide more effective treatments and to target diseases that have so far evaded our collective intervention efforts. As scientists learn more about human genes and their connection to diseases, these insights can feed into tools that make drug R&D faster, less expensive and more precise.

AI technology has matured to the point where it can now be used reliably to analyze huge amounts of data and solve extremely complex problems. This has made AI attractive to the pharmaceutical industry as a tool that can enable more efficient identification of new drugs and drug targets. In 2020, drug discovery was the focus area that received the most private AI investment, with more than $13.8 billion invested globally. This was 4.5 times higher than the total for 2019.6

CRISPR gene editing is another hot technology that is enabling the development of more innovative and accurate therapeutic strategies. This tool is making it easier to determine the genes and proteins that cause or prevent disease and thus to identify new targets for potential drugs. As of the second quarter of 2020, there were 724 active companies around the world focused on using or developing CRISPR technology and almost 50 clinical trials involving CRISPR.7

mRNA was certainly one of the brightest technology stars of 2020. After decades of research, mRNA proved to be the ideal solution for developing a highly effective COVID-19 vaccine at record speed. However, this is likely only the beginning of the story for mRNA. Therapies based on mRNA technology are being developed to treat malaria, cancer and multiple sclerosis and we’ll likely see more mRNA-based vaccines designed to fight a host of current and future infectious diseases. As of February 2021, CB Insights reports more than 520 ongoing clinical trials worldwide that were applying mRNA technology to more than 20 disease classes.8

#### The plan undermines the economic certainty provided by TRIPS---that disrupts innovation in every sector

Lee and Holt 5-10 Tom Lee & Christopher Holt 5-10, Tom received a B.A. in Economics with a Statistics Minor from the University of Maryland, College Park, in 2018. Christopher has a Master’s in Congressional and Presidential Studies from The Catholic University of America, and he studied political science as an undergraduate at Whitman College. American Action Forum, May 10, 2021. “Intellectual Property, COVID-19 Vaccines, and the Proposed TRIPS Waiver” <https://www.americanactionforum.org/insight/intellectual-property-covid-19-vaccines-and-the-proposed-trips-waiver/> brett

Public posturing aside, the Biden Administration surely knows that a TRIPS waiver for COVID-19 related IP will likely be futile. Scaling up production, as Klain alluded to, has proven to be the main challenge to manufacturing larger quantities of vaccine.[4] Waiving TRIPS would do nothing to address this constraint. Waiving TRIPS would instead encourage IP abuse and distort market forces and innovation. TRIPS Provisions The TRIPS agreement is an international trade agreement among all 164 members of the WTO. It is one of three founding and central components of the WTO, along with the General Agreement on Tariffs and Trade (GATT) and the General Agreement on Trade in Services (GATS). The purpose of the TRIPS agreement is to unify trade and provide increased certainty in international economic relations. Among other things, TRIPS specifically: Provides minimum IP protections and standards that apply to all WTO members; Outlines enforcement actions that countries can undertake to remedy violations of the above standards; and Establishes dispute settlement procedures to allow countries to negotiate an end to disagreements. TRIPS does, however, allow for compulsory licensing where in a public health emergency, a country may copy patented drugs without the permission of the original manufacturer with WTO approval. Proposal to Waive TRIPS The recent proposal submitted by India and South Africa and signed on by over 100 developing countries would waive four specific protections of COVID-19 vaccines and related medical products and services: Copyrights; Patents; Trademarks; and Undisclosed information procedures. The first three protections allow companies to prevent foreign companies from copying their products. They require the original company to disclose information about the product, however. Foreign companies are free to study the disclosed information of the patent but cannot copy it unless given a licensing agreement from the original company. Contrarily, companies can choose not to get patents for their products and instead keep their information secret. The fourth protection prevents the theft of trade secrets of foreign companies. While TRIPS has been waived previously, if approved, this would be the broadest waiver since the agreement’s enactment in 1995.[5] TRIPS and Manufacturing Capacity The primary justification for waiving TRIPS is that IP protections cause underutilized manufacturing capacity. By removing TRIPS, developing nations could copy patented drugs and use their own manufacturers to produce vaccines, thereby increasing access. This rationale, however, is flawed. Adar Poonawalla, CEO of the Serum Institute of India—currently the largest producer of COVID-19 vaccine doses in the world—has argued that access to IP is not limiting vaccine production, rather it is the time involved in scaling up manufacturing capacity.[6] It should also be noted that Moderna has already pledged not to enforce its own COVID-19 vaccine patents during the pandemic.[7] In addition, COVID-19 vaccines such as those produced by Pfizer and Moderna use emerging and very complex technologies and processes. These technologies and processes are essential to producing and increasing scale of COVID-19 vaccines. They are not published in patents but rather kept as trade secrets. The fourth protection mentioned above only prevents theft of trade secrets; it does not allow or disallow a company from keeping trade secrets. Waiving TRIPS therefore does nothing to speed up vaccine production even if there were excess manufacturing capacity, as manufacturers would not receive the essential trade secrets they would need. The issue at present is not underutilized manufacturing capacity, rather scaling up production has been the largest difficulty of vaccine manufacturing. It takes anywhere from 60 to 120 days to produce a single batch of vaccines. Even with manufacturing challenges, between 9.5 and 13.5 billion doses of COVID-19 vaccines are projected to be produced in 2021. Eleven billion doses would be sufficient to vaccinate 70 percent of the world population and reach heard immunity, assuming 2-dose vaccinations.[8] TRIPS and Compulsory Licensing Separate from a broad IP waiver, TRIPS includes a compulsory licensing process. Foreign manufacturers are free to ask a patentee for a voluntary licensing agreement to manufacture a product. This process can be long, however, and the patentee can ultimately refuse. When this happens, TRIPS allows the manufacturer through its national government to grant a compulsory license provided the manufacturer has first sought a voluntary licensing agreement. This compulsory license is issued by that national government to the manufacturer to produce a patented drug without the original patentee’s permission. Each compulsory license must apply to a specific product. It is important to note that TRIPS does not have a governing body which oversees this process. At the same time, if a country grants an internationally unpopular compulsory license, it will face economic, political, and retaliatory ramifications from other governments and private firms, so governments must weigh these costs. In addition, if a country declares a national emergency or other circumstances of extreme urgency, TRIPS allows a foreign manufacturer to immediately apply for a compulsory license, skipping the process to apply for a voluntary license. A TRIPS waiver, like the one suggested for COVID-19-related IP, is therefore entirely unnecessary—even if IP protections were an obstacle to vaccine access. In the case of COVID-19, compulsory licensing would not, however, address the real issues related to scaling manufacturing capacity. The Vagueness of the Proposed TRIPS Waiver Under the broad language of the proposed TRIPS waiver, any drugs that have use for patients with COVID-19, including those that predate the pandemic, could lose patent protection. Thus, a foreign company could produce a specific drug under the auspices of COVID-19 but sell it for another disease. Moreover, the foreign company would not have to provide any financial compensation to the company from whom they took the IP. The proposal’s language is so broad that other patented medical products beyond pharmaceutical drugs such as masks, non-pharmaceutical chemical compounds, and respirators would also be subject to the waiver. It is also noteworthy that the vaccines developed by Pfizer, Moderna, and Johnson & Johnson are not currently approved by the Indian government for use in India, due to regulatory obstacles related to localized clinical trials. Effectively then, India is pointing to IP protections as an obstacle to obtaining vaccines they have not even approved for use in their country.[9] At the same time, a concerted global effort is underway to ensure access to COVID-19 vaccines in all countries. The WHO, Gavi (previously the Global Alliance for Vaccines and Immunization), and the Coalition for Epidemic Preparedness Innovations have partnered to establish the COVAX initiative, designed specifically to distribute vaccines to the developing world. COVAX is projected to distribute at least 2 billion vaccines by the end of 2021.[10] Johnson & Johnson has further announced plans to distribute 500 million vaccines to developing nations starting in mid-2021, in addition to those it already allocated to other nations.[11] TRIPS and Innovation The TRIPS agreement and its IP protections were created to increase unity and certainty in the global economy. The economic certainty provided by IP protections preserve competitiveness and increase value—i.e., IP protections provide incentives to companies to create new and groundbreaking technologies. In terms of the COVID-19 pandemic, perhaps it is these incentives that encouraged companies to produce vaccines quickly and successfully. Without IP protections, companies could not reap the rewards of their efforts. Waiving TRIPS would weaken the market forces that encourage innovation. Combined with the broad language of the TRIPS waiver, the loss of innovation would happen in many industries and sectors of the global economy. Conclusion The proposal to waive TRIPS is based on the misperception that IP protections serve as barriers to COVID-19 vaccine production. In fact, the difficulty of scaling up production is the key challenge. Waiving TRIPS will do nothing to increase vaccine production, represents poor policy toward IP, and will create a whole new set of trade policy challenges. A better approach is to build upon current global vaccine partnerships while ensuring that companies can secure their supply chains. Such efforts would increase access to vaccines while avoiding the potentially widespread and long-term problems associated with waiving IP protections provided by TRIPS.

#### Innovation is an impact filter---it encompasses AND outweighs every existential threat.

Matthews 18 Dylan Matthews . Co-founder of Vox, citing Nick Beckstead @ Rutgers University. 10-26-2018. "How to help people millions of years from now." Vox. <https://www.vox.com/future-perfect/2018/10/26/18023366/far-future-effective-altruism-existential-risk-doing-good> brett

If you care about improving human lives, you should overwhelmingly care about those quadrillions of lives rather than the comparatively small number of people alive today. The 7.6 billion people now living, after all, amount to less than 0.003 percent of the population that will live in the future. It’s reasonable to suggest that those quadrillions of future people have, accordingly, hundreds of thousands of times more moral weight than those of us living here today do. That’s the basic argument behind Nick Beckstead’s 2013 Rutgers philosophy dissertation, “On the overwhelming importance of shaping the far future.” It’s a glorious mindfuck of a thesis, not least because Beckstead shows very convincingly that this is a conclusion any plausible moral view would reach. It’s not just something that weird utilitarians have to deal with. And Beckstead, to his considerable credit, walks the walk on this. He works at the Open Philanthropy Project on grants relating to the far future and runs a charitable fund for donors who want to prioritize the far future. And arguments from him and others have turned “long-termism” into a very vibrant, important strand of the effective altruism community. But what does prioritizing the far future even mean? The most literal thing it could mean is preventing human extinction, to ensure that the species persists as long as possible. For the long-term-focused effective altruists I know, that typically means identifying concrete threats to humanity’s continued existence — like unfriendly artificial intelligence, or a pandemic, or global warming/out of control geoengineering — and engaging in activities to prevent that specific eventuality. But in a set of slides he made in 2013, Beckstead makes a compelling case that while that’s certainly part of what caring about the far future entails, approaches that address specific threats to humanity (which he calls “targeted” approaches to the far future) have to complement “broad” approaches, where instead of trying to predict what’s going to kill us all, you just generally try to keep civilization running as best it can, so that it is, as a whole, well-equipped to deal with potential extinction events in the future, not just in 2030 or 2040 but in 3500 or 95000 or even 37 million. In other words, caring about the far future doesn’t mean just paying attention to low-probability risks of total annihilation; it also means acting on pressing needs now. For example: We’re going to be better prepared to prevent extinction from AI or a supervirus or global warming if society as a whole makes a lot of scientific progress. And a significant bottleneck there is that the vast majority of humanity doesn’t get high-enough-quality education to engage in scientific research, if they want to, which reduces the odds that we have enough trained scientists to come up with the breakthroughs we need as a civilization to survive and thrive. So maybe one of the best things we can do for the far future is to improve school systems — here and now — to harness the group economist Raj Chetty calls “lost Einsteins” (potential innovators who are thwarted by poverty and inequality in rich countries) and, more importantly, the hundreds of millions of kids in developing countries dealing with even worse education systems than those in depressed communities in the rich world. What if living ethically for the far future means living ethically now? Beckstead mentions some other broad, or very broad, ideas (these are all his descriptions): Help make computers faster so that people everywhere can work more efficiently Change intellectual property law so that technological innovation can happen more quickly Advocate for open borders so that people from poorly governed countries can move to better-governed countries and be more productive Meta-research: improve incentives and norms in academic work to better advance human knowledge Improve education Advocate for political party X to make future people have values more like political party X ”If you look at these areas (economic growth and technological progress, access to information, individual capability, social coordination, motives) a lot of everyday good works contribute,” Beckstead writes. “An implication of this is that a lot of everyday good works are good from a broad perspective, even though hardly anyone thinks explicitly in terms of far future standards.” Look at those examples again: It’s just a list of what normal altruistically motivated people, not effective altruism folks, generally do. Charities in the US love talking about the lost opportunities for innovation that poverty creates. Lots of smart people who want to make a difference become scientists, or try to work as teachers or on improving education policy, and lord knows there are plenty of people who become political party operatives out of a conviction that the moral consequences of the party’s platform are good. All of which is to say: Maybe effective altruists aren’t that special, or at least maybe we don’t have access to that many specific and weird conclusions about how best to help the world. If the far future is what matters, and generally trying to make the world work better is among the best ways to help the far future, then effective altruism just becomes plain ol’ do-goodery.\*

## 2

#### CP Text: the member nations of the World Trade Organization should

* Remove restrictions on vaccine exports
* Reduce remaining tariffs and streamline non-tariff measures to trade in vaccines
* Increase international co-operation and co-ordination

#### - The United States should publicly renounce its support for any COVID TRIPS waivers.

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All **countries need vaccines but not all can produce them. Vaccine production is highly specialised, subject to comparative advantages, and concentrated in few countries**, making **trade a vital means to deploying vaccines broadly**. Keeping markets open by reducing tariffs, streamlining trade-related processes at and behind the border while ensuring better co-ordination of logistical processes will be key to ensuring timely access to vaccines for all. This note discusses trade and **trade policy considerations underpinning access to the final and intermediate goods needed to effectively produce**, deliver and administer **COVID-19 vaccines**. It focuses on the international aspects of the vaccine supply chain, discussing the sourcing, production, distribution and need to expedite international border crossing and transportation (including in the context of the cold supply chain). Announcements on the efficacy of emerging COVID-19 vaccines have provided a glimmer of light at the end of the tunnel. However, mass manufacturing and distribution of vaccines will continue to pose challenges. An analysis of the international aspects of the vaccine supply chain shows that. All countries need vaccines, but not all are able to produce them. Vaccine production is highly specialised and subject to comparative advantages. **Trade will therefore play a key role in enabling access to COVID-19 vaccines, especially for developing countries**. **There are strong trade interdependencies in the goods needed to produce, distribute and administer vaccines**. Besides the active ingredients needed to produce vaccines, distribution and administration requires access to goods produced across a range of countries: vials to move the vaccines, syringes to administer, cold boxes to transport, dry ice to maintain cold temperatures, and freezers to store. The production of COVID-19 vaccines is likely to be geographically concentrated, but the demand is global. Distributing vaccines poses significant logistical challenges that could be addressed by: Promoting online communications hubs to share information on existing manufacturing facilities and connecting potential distributors. Keeping markets open. Despite strong trade interdependencies, **tariffs on vaccines and key inputs remain and will negatively impact the ability to get vaccines to where they are needed**. Duties on vaccines exist in 22% of economies, with 8% applying duties above 5%. Average world tariffs on vaccine ingredients such as preservatives, adjuvants, stabilisers, antibiotics range between 2.6% and 9.4%. **It will also be important that countries avoid export restrictions on both intermediate and final goods to ensure vaccines can be effectively distributed. Increasing international co-operation and co-ordination to enable vaccines to move seamlessly across borders. Focus might be best placed on streamlining processes at the border, ensuring better co-ordination of logistical processes, and relaxing, where possible and without prejudice to safety, trade-related regulatory burdens**. Ensuring access to the medical equipment and related goods needed to fight COVID-19 was an immediate challenge during the first wave of the pandemic. Analysis revealed that no country was able to efficiently produce all the goods needed to fight the virus, highlighting the high degree of trade interdependencies between countries (OECD, 2020[1]). During the second wave, promising announcements by Pfizer-BioNTech, Moderna, and Astra-Zeneca/Oxford University on the efficacy of vaccines in development, and subsequent publications of clinical trial results and marketing authorisations for these products in several OECD countries, have provided a glimmer of light at the end of the tunnel. Here too, trade will play a key role in enabling mass production and distribution of vaccines across the globe (WTO, 2020[2]). Vaccine manufacturing is a sophisticated process that requires access to specialised equipment and inputs, storage facilities, and highly skilled labour. Trade data can provide useful insights into the supply and demand conditions that existed for vaccines prior to COVID-19, thereby helping to identify the production capacities and existing trade infrastructure that can be exploited for the distribution of new vaccines. Vaccines (for human use) are classified under a single Harmonised System (HS) code (300220).[1](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z2) This facilitates the analysis of broad supply and demand conditions, albeit at the expense of more detailed information on which vaccines are traded by which countries. The most **recently available trade data reveal that while vaccines are imported by most countries around the globe, they are in relative terms exported by few countries**([Figure 1](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#figure-d1e160)).[2](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z3) Vaccines are imported by 208 economies (relative to other products, vaccines are in the 6th percentile in terms of the total number of importing countries); whereas they are exported by 90 economies (relative to other products, vaccines are in the 35th percentile in terms of total number of exporting countries). All countries need vaccines but not all are able to produce them. There is significant concentration in the exports of vaccines. The top 10 exporters account for 93% of global export value (80% in terms of volume). Ireland is the top exporter by value, accounting for 28% of global exports, followed by Belgium (which is the top exporter by volume) representing 21%[3](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z4) ([Figure 2](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#figure-d1e251)). Rankings of export volumes differ from value rankings, revealing significant heterogeneity in unit prices across suppliers. Imports are, in relative terms, less concentrated in both value and volume although the top 10 importers still represent 72% of global import values (69% in terms of volume). The United States is the top importer with 24% of global imports, followed by Belgium with 22% of global imports (Figure 2b).[4](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z5) Developing economies depend on high-income countries for vaccines. The European Union (EU) is the main source of vaccine imports for all regions. In particular, South Asia and Sub-Saharan Africa import more than two-thirds of their vaccines from the European Union (Annex A). East Asia and South Asia are nevertheless increasingly becoming a source of vaccines for other developing regions. Countries with higher per capita GDP export vaccines having higher unit values, suggesting that richer countries specialise in higher-end, more complex vaccine production (Annex A). However, in terms of imported vaccines there is less dispersion in unit values.[5](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z6) This indicates strong specialization patterns along comparative advantages: countries will specialise in the production of some types of vaccine but use imports to access others.[6](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z7) The safe and timely delivery of vaccines depends on the efficiency of the supply chains that underlie their production and distribution. Although each vaccine will involve different components, the vaccine supply chain can be broken down into three, and sometimes four, key steps (depending on the vaccine) ([Figure 3](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#figure-d1e363)). The first is the *drug discovery process*, the second *mass production*, the third *distribution and administration*, and the last the *reverse logistics* (in the event that products such as cool boxes need to be returned). Different stages of this supply chain will be located in different countries. Indeed, while mass production might be geographically concentrated, many of the ingredients needed in production or for primary and secondary packaging will come from different sources. **This means that trade** will play an **important role in enabling mass production, distribution, and administration of vaccines**. **Vaccine production** involves a complex **range of steps that require not only significant up-front investment in R&D (WTO, 2020[2]), but also in selecting suppliers of key ingredients, setting up manufacturing processes**[**7**](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z8)**and quality checks, and sourcing primary and secondary packaging**. Each vaccine has specific active components (the antigen) that generate different immune responses. Some contain an inactivated form or component of the disease-causing organism; in the case of some of the novel COVID-19 vaccines, a blueprint enables the intercellular production of the antigen.[8](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z9) The latter will determine the manufacturing process and the type of production facility that is needed. Vaccine production requires more than the core ingredients, however. Vials and rubber stoppers are needed to store the vaccines, cold boxes to transport[9](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z10) them, and dry ice to keep these at appropriate temperatures. Drawing on trade data and product codes identified by the Asian Development Bank (ADB),[10](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z11)[Figure 4](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#figure-d1e465) highlights the diverse origins of the ingredients and goods needed to produce, distribute and administer vaccines, from adjuvants to vials. As was the case with the goods needed to fight COVID-19 (OECD, 2020[1]), trade data reveal a high degree of trade interdependence in the goods needed to produce, distribute and administer vaccines. The distribution of vaccines will also require the use of specialised warehousing, different modes of transport, and last-mile delivery. Once distributed, **vaccines** will **require qualified personnel and a range of goods to store (freezers) and administer (syringes, needles and vials)**. Lastly, and particularly for vaccines that require a specialised cold supply chain, some of the secondary packaging will need to make its way back so that it can be re-used. Leveraging existing manufacturing capacity to meet global COVID-19 vaccination goals will require moving goods into factories and transporting finished products to their final destination. Existing evidence on production capacity is scarce, especially in light of the uncertainty on which vaccine(s) will be administered the most extensively. Survey results from the Coalition for Epidemic Preparedness Innovations (CEPI) highlight that potential manufacturing capacity is concentrated in a few high income and emerging economies, with the United States, the People’s Republic of China (hereafter “China”), and India being the largest potential producers. These are followed by several economies in the European Union, Australia, Brazil, Canada, the Russian Federation, and the United Kingdom (CEPI, 2020[3]).[11](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z12) Visualising the location of potential COVID-19 vaccine manufacturers and distributors ([Figure 5](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#figure-d1e594)) confirms this, and highlights the strong degree of concentration of producers and distributors in high income and emerging economies (ADB, 2020[4]). Few firms are registered as vaccine distributors in South America or Southeast Asia, and no producer or distributor firms are registered in Africa and Central Asia[12](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z13) ([Figure 5](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#figure-d1e594)).[13](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z14) This geographical concentration underscores the importance of trade links for the production and supply of COVID-19 vaccines, and the logistical challenge of supplying vaccines globally. Vaccines will need to be shipped from relatively few locations to individuals across the entire globe. Ensuring their timely delivery and maintaining them at adequate temperatures would favour air freight as mode of delivery. However, belly cargo capacity continues to be constrained.[14](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z15) Recent data proxy for cargo availability shows that for most trade lanes, air cargo capacity was between 2% and 50% lower in Q4 2020 as compared to the same period in 2019 ([Figure 6](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#figure-d1e624)) (IATA, 2021[5]). Monitoring specific air cargo capacity available across main trade routes will be key to enabling the effective supply of vaccine ingredients to manufacturers and the distribution of finished vaccines and ancillary equipment. Many of the most impacted trade lanes are those that might be significant in distributing COVID-19 vaccines and related ingredients (e.g. Asia, Europe, and North America exporting to other regions such as Asia-Pacific, Middle East, Central and South America, and Sub-Saharan Africa) (IATA, 2021[5]). Constrained capacity directly relates to higher air freight costs, and prioritisation of COVID-19 vaccines is also likely to have displacing effects on other trade that travels via air. Tariffs are unlikely to pose major challenges to the vaccine distribution efforts overall: the simple average world tariff on vaccines is 0.76% ([Figure 7](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#figure-d1e681)) – about one-tenth of the average tariff imposed on total trade (7.1%). Out of 183 countries, four-fifths apply zero duties.[15](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z16)This still means that one-fifth of countries have positive duties on vaccines, with 8% having a duty equal to or greater than 5%. So while tariffs are less likely to pose major challenges, additional steps could be taken to ensure that vaccines meet zero duties in all countries. Higher tariffs remain on vaccine-related inputs, increasing the final price. For instance, average world tariffs on vaccine ingredients such as preservatives, adjuvants, stabilisers, antibiotics range between 2.6% and 9.4%. Tariffs on materials to administer vaccines, such as syringes and needles, are in a similar range (4.4% and 4.5%). Tariffs for primary packaging (e.g. vials and stoppers) or distribution materials (such as cold boxes, freezers, or dry ice) can go up to 12.7%. Pharmaceutical products and organic chemicals, which include vaccines as well as a number of their ingredients, are among the products that attract the highest number of non-tariff measures (NTMs). In OECD countries, these two sectors must comply with on average around 38 and 29 different NTMs respectively – mainly in the form of technical barriers to trade (TBT), sanitary and phytosanitary measures (SPS), price-control measures, and import licensing measures ([Figure 8](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#figure-d1e730)).[16](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z17) While some of these standards and regulations can reduce information asymmetries and strengthen confidence in imported products (Cadot, Gourdon and van Tongeren, 2018[8]), they also translate into compliance costs and controls at the border. These regulations are undoubtedly important to protect the health and safety of citizens, but there may be areas where unnecessary duplication or cumbersome processes exist. Mapping the relevant regulatory requirements, processes, and approvals for access to different markets will therefore be key to enabling more efficient vaccine distribution and reducing unnecessary trade costs. Trade facilitating measures introduced at the height of the COVID-19 pandemic have helped streamline border processes for pharmaceutical and medical goods (OECD, 2020[9]) (Evenett et al., 2020[10]). These can continue to be useful tools for expediting border clearance for vaccines and related ingredients, including the “green lanes” or “corridors” for fast clearance (e.g. those introduced at intra-EU borders), electronic submission of documents for pre-arrival processing, simplified import and export declaration forms, and extended business hours at specific border posts. They will be important not just to facilitate border clearance for vaccines, but also for the inputs needed to manufacture, distribute, and administer them.[17](https://www.oecd.org/coronavirus/policy-responses/using-trade-to-fight-covid-19-manufacturing-and-distributing-vaccines-dc0d37fc/#endnotea0z18) Co-operation and co-ordination between Customs and other relevant agencies need to be improved to streamline processes at the border. Continuing to invest in digital infrastructure to support the use of automated tools such as electronic pre-arrival processing and electronic data exchange between relevant border agencies can play an important role in improving co-operation mechanisms and risk management. This would allow border agencies to better respond to actors along the vaccine supply chain on the release status of goods through electronic channels within strictly defined time limits (Global Express Association, 2020[11]). Logistics operators show different degrees of preparedness, highlighting the need for more co-operation with and amongst the private sector. For instance, ground handlers and airport operators feel they are less prepared than do forwarders and airlines (Pharma-Aero/TIACA, 2020[12]). Top concerns revolve around managing the necessary infrastructure (facilities, cold chain ground equipment, containers, etc.), supply chain transparency on shipment transport conditions, transportation time, and customs clearance. According to IATA, up to 20% of temperature-sensitive pharmaceutical products are already damaged at arrival because the cold chain was disrupted during transport (IATA, 2015[13]). The specificities of transporting vaccines – e.g. some types of refrigerants are classified as dangerous goods and the reverse logistics needed to return cold chain equipment – also require attention. A wide range of uncertainties remain in manufacturing and distributing COVID-19 vaccines across the globe. These include: the variety of inputs needed; the manufacturing capacity and pace of production; the roll-out schedules for administering vaccines; the requirements for transport and storage; and the availability of cargo. These uncertainties affect the ability to make decisions and reduce the level of preparedness. This note highlights the **importance of trade in the effort to produce, distribute, and administer vaccines. As not all countries can produce these, trade enables access to vaccines and to their key ingredients,** as well as to the goods needed for their distribution and administration. In the face of **existing uncertainties, trade needs to provide an environment that is conducive to broader vaccine distribution by: Reducing remaining tariffs and streamlining non-tariff measures to trade in vaccines, key related ingredients in their production, and the goods needed to safely distribute and administer these**. **Avoiding export restrictions to ensure the effective functioning of supply chains and the distribution of vaccines globally, in light of the concentration of input sourcing and vaccine manufacturing capacities.** Increasing co-operation within and between Customs and other relevant agencies with a view to expediting processes at the border, ensuring better co-ordination of logistical processes, and relaxing, where possible and without prejudice to safety, trade-related regulatory burdens. The continued implementation of the WTO Trade Facilitation Agreement (TFA) is essential to streamlining border processes, while specific logistics and border challenges could be addressed through public-private consultation structures such as National Trade Facilitation Committees. This would include investing in the adoption of digital infrastructures and processes. Improving transparency and information sharing across the entire value chain to enable the different actors to find each other and enable more efficient production and distribution via trade channels. This could be achieved through the use and promotion of online information hubs, such as those undertaken by the Asian Development Bank (ADB).

#### Export restrictions key to vaccines

Peters and Prabhakar 6-11 Ralf Peters is the chief of UNCTAD's trade information section. Divya Praghakar is a trade and development policy specialist working in the same section. , 6-11-2021, "Export restrictions do not help fight COVID-19," Unctad, <https://unctad.org/news/export-restrictions-do-not-help-fight-covid-19>, accessed 8/20/2021 EH

Brazil, India, Laos, Nepal, Peru, Thailand: new and even more catastrophic waves of COVID-19 have hit the developing world. On top of this, the world is also witnessing another phenomenon – vaccine nationalism. Come summer, wealthy nations are beginning to return to normal, while the rest of the world continues the struggle to vaccinate its population. Many are eyeing the G7 countries, who are set to meet in June, to lead the way to vaccine equity. But two questions persist: why are vaccines not reaching everyone? And what can we do about it? As the pharmaceutical powerhouse of the world and a key supplier of the COVAX initiative, India was poised to help a great number of developing and least developed countries by supplying COVID vaccines. However, facing a catastrophic second wave itself, it has not only stopped exporting vaccines, but is now beginning to import them. The implications of this could be severe, particularly for poorer countries that were depending on India. The ripple effects would hit the most vulnerable countries the hardest, leaving them behind in the respective vaccination drives. 60% of vaccines for 20% of the population The WHO has already warned of a new wave in Africa, where vaccine imports have slowed down since India stopped exporting. But it is not just India. Other vaccine producing countries like the US and the European Union have imposed restrictions on exports of vaccines and critical raw materials needed for its production. This is despite having already hoarded over 60% of the world’s vaccines before they were even approved for use. These developed countries comprise no more than 20% of world’s population. The production of vaccines is highly concentrated, mainly in a small number of higher and middle-income countries. The necessary raw materials, too, are imported from only a handful of countries. The two top exporters of key ingredients, for instance, are the US and the EU – which account for half of total exports – followed by the UK, Japan and China, with significantly smaller shares. This implies that restrictions on exports of vaccines or other critical raw material and equipment by even one or two countries can easily send shockwaves through the rest of the world, derailing the entire vaccine production and distribution effort, as we see at present. Export restrictions are not exclusive to vaccines. Over 80 countries had resorted to banning exports of medical and personal protective goods in the early phases of the pandemic. This too had severe supply chain implications. Nearly 60% of these curbs are still in place. Ultimately, these export restrictions may come back to bite the countries who imposed them. As the virus continues to mutate, it may render vaccines ineffective and the already vaccinated less immune. The global economy, too, will not revive until everyone is vaccinated, since lockdowns and social distancing norms in key manufacturing locations continue to curtail global trade. Besides, this is a huge moral failure on the part of the global community. A turning point? The subject of export restrictions should be tackled at the WTO. The pandemic should serve as both a reference and a turning point. Reviving the debate around emergency export bans should form a key part of the WTO reform agenda. The current rules allow for temporary export restrictions or prohibitions to prevent or relieve critical shortages of essential products, provided all measures are communicated, have phase out timelines and are proportionate to the scale of the problem at hand. But who decides what constitutes proportionate, and what timeline is reasonable? Export restrictions are sometimes seen as a necessary instrument to ensure popular acceptance of multilateral trade agreements. The latter is important. However, open markets do not fit with sudden export restrictions during a pandemic. It is perhaps time for stricter rules on essential goods, which can ensure transparency through more effective monitoring and review of members states’ trade policies during emergencies. Some sort of “compulsory” provisions to ensure that dependent countries’ interests are accounted for in emergency situations should be agreed upon. The declaration of a pandemic by the WHO could be one objective trigger for the state of emergency, a declaration by the FAO of a food shortage another. A recent UN policy brief calls for an agreement not to impose export restrictions on essential foodstuffs destined for food-deficit developing countries during an emergency situation. Achieving full transparency through strengthened notifications is a relatively low hanging fruit, but already an important measure. Special and differential treatment provisions, without much wriggle room for major exporters, should be emphasised. The global community needs to present a united front now so that everyone is equally prepared in future crises. Outside the WTO, national governments and the private sector will have to reduce their over-reliance on a small number of manufacturing sites for vaccines or other pharmaceutical goods, which, as the pandemic has shown, can be quite costly.

## 3

#### Dip cap key to check climate

Yu 20 Alan Yu, a senior fellow and the director of International Climate Policy at the Center for American Progress. Previously, he was a career foreign service officer at the State Department., 12-8-2020, "How U.S. Diplomacy and Diplomats Can Help Get International Climate Action Back on Track," Center for American Progress, https://www.americanprogress.org/issues/green/reports/2020/12/08/493528/u-s-diplomacy-diplomats-can-help-get-international-climate-action-back-track/, accessed 7/27/2021 EH

Throughout the 2020 presidential campaign and in the early days of the transition, President-elect Joe Biden has made clear that climate action will be a core element of his plan to “build back better,” driving toward a more resilient, sustainable economy that will put the United States on an irreversible path to achieve net-zero emissions by no later than 2050.1 President-elect Biden’s first foreign policy actions have also demonstrated a commitment to make climate change a central pillar of his foreign policy. He has announced a senior national security team that recognizes the linkage between U.S. national security and climate change and is committed to climate action.2 He has raised climate action in every congratulatory call he has received from foreign leaders.3 And, most notably, he has created the new position of special presidential envoy (SPE) for climate change and enlisted former U.S. Secretary of State John Kerry, Washington’s leading climate champion—a strong signal that President-elect Biden intends to return the United States to global climate change leadership. President-elect Biden’s intention to position climate action as a central focus of U.S. foreign policy aligns with recommendations by the Center for American Progress and other leading international climate and U.S. foreign policy experts.4 Although President-elect Biden and SPE-designate Kerry will lead this transformation, it will be the U.S. Department of State and U.S. diplomats who will execute this new charge. This will require fundamental changes to the U.S. foreign policy apparatus and the work of its diplomats. At a time when experts are calling for reform and repurposing how the State Department executes a foreign policy to fit changing global challenges, now is the time to design for the centrality of climate action in the department’s mission and operations.5 There is no alternative to the United States for driving all countries toward climate ambition and action—including China, the world’s largest carbon emitter.6 Restoring U.S. leadership in the global fight against climate change is in the U.S. national interest and the global interest. But while the world would welcome the United States back to the fight against climate change, four years of head-snapping changes in U.S. policy—such as reversals in domestic climate policies and actions, withdrawal from the Paris Agreement, and retreat from global cooperation—have eroded trust in the United States’ consistency and commitment. America must demonstrate that it is a reliable global leader and partner. In order for the Biden administration to restore U.S. climate leadership and then drive global action, it will need to determine what the U.S. government will do and how it will do it. The president and his special envoy must lead, but they should put U.S. diplomats and the State Department in the central role to drive global climate action. This issue brief offers some priority actions for the new administration to consider and a series of detailed recommendations on how to execute these changes through leadership and actions by the president, the secretary of state, and U.S. ambassadors overseas. It concludes with recommendations on management reforms, including a boost in foreign service personnel, which the State Department should adopt to make the centrality of climate diplomacy in U.S. foreign relations built to last. A progressive U.S. agenda on global climate action President-elect Biden has been clear that a return to the Paris Agreement would be the first necessary step for the United States to reclaim its place in international climate leadership,7 but his administration will have much to do to repair the United States’ reputation and move to counter climate change. A U.S. agenda for international climate policy that prioritizes urgent and consequential outcomes should include the following core actions: Promptly deliver an ambitious and credible plan to demonstrate to the world that the United States will act domestically to reduce greenhouse gas emissions to net-zero by 2050.8 Reengage diplomatically in key multilateral processes and with major climate players such as China, India, the European Union, and Brazil to drive stronger and faster collective and country actions. Restore and elevate the United States’ work with developing countries to support their efforts to achieve their development goals in a clean energy pathway that aligns with the Intergovernmental Panel on Climate Change’s recommendation to limit global temperature rise to 1.5 degrees Celsius and that strengthens their resilience to the impacts of climate change.9 Accelerate work across U.S. agencies—such as the departments of State, Defense, Treasury, Agriculture, and Energy and the U.S. Agency for International Development (USAID)—and with key foreign governments, research institutions, and other stakeholders to deepen America’s understanding and planning to address the national security risk implications of climate change and develop measures to address them. Draw from the U.S. trade and financial policy toolkits to catalyze increased climate action by major emitters beyond U.S. borders. How can the Biden administration best position itself to drive climate action internationally? CAP identifies two key factors: Washington’s demonstration of climate leadership and a strategic use of the full power of U.S. diplomacy. Presidential leadership: The centrality of international climate action in words and deeds As noted earlier, President-elect Biden has demonstrated both in his statements and senior appointments his intention to prioritize climate action in his foreign policy agenda. As a practical matter, the new administration’s first priority on climate will be to deliver an ambitious and credible domestic plan to make up for lost progress. Demonstrating bold action at home is also the first step to regaining U.S. climate influence abroad to drive global action. In turn, helping to drive action internationally will be critical in order for the administration to sustain public support for domestic climate ambition. After he is sworn in, President-elect Biden should use the occasion of his first foreign policy speech to speak directly to the American people about the urgency of the climate crisis and the need for action—and explain how he will deliver climate results globally at the same time he calls for consequential domestic transformations. He should make the case that combatting climate change globally is in the economic and security interests of the United States and declare that, under his National Security Strategy, he will make achieving meaningful climate action beyond U.S. borders a central priority of U.S. foreign policy. President-elect Biden and senior leaders in his administration must reinforce that message and vision to both domestic and international audiences—and, importantly, to his own government. To reinforce his words, the president-elect can take the following steps to put climate at the center of U.S. foreign policy: Engage in presidential climate diplomacy. President-elect Biden has demonstrated this commitment to engaging on climate change in his congratulatory calls from foreign leaders. Once in office, he should continue to make clear to foreign governments that the U.S. government will prioritize addressing climate change in all bilateral relationships. He should commit to making climate an ongoing leader-level topic with key global climate players such as China, India, the European Union, and Brazil, and he should include it on his agenda at the G-7, G-20, NATO, and Asia Pacific Economic Cooperation, commonly known as APEC. Appoint senior officials committed to climate action. The president should select senior leadership who embrace this new paradigm and are committed to leading this transformation in U.S. foreign policymaking. His nominees for secretary of state, secretary of the treasury, national security adviser, and director of the national economic council do just that. He should look for those same qualities in his nominees for secretaries of defense and energy, U.S. trade representative, USAID administrator, and ambassadors to China, India, the European Union, and Brazil. Give his special presidential envoy for climate change resources and authority. Former Secretary of State John Kerry’s appointment to the SPE role gives the administration immediate credibility in foreign capitals and a leader with diplomatic experience, substantive expertise, and policy passion. To deliver on this central foreign policy priority, the White House must grant the SPE sufficient authority to lead across the government, mobilizing cabinet agencies to align diplomats and technical experts, as well as development assistance and other policy tools. His seat on the National Security Council is critical for that reason. The secretary of state-SPE relationship will also be critically important. Boost the federal climate budget to meet the crisis. To reinvigorate U.S. diplomatic and development strategies, the president-elect should seek funding from Congress to hire 500 new diplomatic positions and boost U.S. climate-related foreign assistance programs to $25 billion over five years. The Biden administration should use the additional funding to make good on U.S. funding commitments to the Green Climate Fund.10 Reenvisioning U.S. diplomacy and climate change For U.S. diplomacy to deliver on global climate action, State Department leaders will need to work seamlessly with SPE-designate Kerry, as the State Department will be the lead agency responsible for executing the reorientation of U.S. foreign policy to a climate-centric vision. The State Department will also need to partner with and rely on the contributions from a wide range of U.S. economic, development, and technical agencies, but it will be ultimately accountable for delivering results. The success of this reorientation will rely critically on the strategic vision and bureaucratic stamina of the secretary of state, who will face both the urgency to act on the climate crisis and the challenge of driving change to the State Department’s outmoded culture, structure, and incentives, which hamper its capacity to deliver stronger climate action. Secretary of State-designate Antony Blinken’s previous experience as deputy secretary in leading and managing the department would enable him to understand the scope of the challenge and lead the change, if confirmed.11 But change will not happen overnight or without the right mix of incentives and structural support. Setting diplomatic course direction at the State Department The Biden administration can draw useful lessons from then-Secretary of State Kerry’s efforts to elevate climate change as a top foreign policy issue and his attempts to implement cultural and operational change at the State Department. Current Secretary of State Mike Pompeo’s whole-of-department approach on China policy also offers insights and a potential model for climate policy management. Both examples illustrate that for climate change to be central to U.S. foreign policy—and not just a niche issue that may or may not be considered more broadly—State Department leaders will need to fully integrate it into department policy and operations, including by embassies worldwide. The secretary of state and State Department leadership should take the following key steps to elevate and center climate action in the work of the department: Set the secretary’s vision for climate diplomacy. One of Secretary-designate Blinken’s first tasks will be to translate the administration’s broad framing of climate change policy into a strategic vision and operational guidance for U.S. diplomats across the world and in Washington. During the Obama administration, Secretary Kerry’s focus on climate shook up the department’s tradition-bound bureaucracy. In his first months in office, he used the secretary’s traditional first message to U.S. embassies worldwide to issue a very nontraditional directive, declaring that climate action would be a top department priority. He identified core objectives and directed bureaus and embassies to realign resources and effort accordingly—and they did.12 In the department’s 2015 Quadrennial Diplomatic and Development Review, Secretary Kerry declared “mitigating and adapting to climate change” to be one of four department priorities.13 Transformative while he was there, Secretary Kerry’s efforts to lock in the primacy of climate in U.S. foreign policy went dormant after the change in administration. CAP recommends that the new administration take policy and administrative steps to build sustainability of climate as a State Department priority. Engage in secretarial climate diplomacy. The single most important action the incoming secretary can take to elevate and give urgency to climate in U.S. foreign policy is to do so in his own diplomacy. Secretary Kerry put climate change on the agenda in all of his foreign diplomatic engagements. For some engagements, climate was a top, extensive discussion topic. For others, it was a secondary but present issue. He took a direct role in securing the Paris Agreement. The department and embassies quickly adjusted and followed his new policy direction. Domestically, Secretary Kerry was a persistent and effective advocate with the White House, federal agencies, Congress, industry, and civil society to align effort and resources in support of the department’s climate agenda. Make the right senior State Department appointments. The department will need senior leaders who accept the strategic imperative of embedding climate action as a central pillar of foreign policy. The secretary of State, deputy Secretary, and undersecretaries14 will be instrumental in driving this change from the top. But it will be the department’s regional bureau assistant secretaries15 and U.S. ambassadors overseas who will direct U.S. diplomats on whether to take up and act on climate as a priority in the nation’s foreign policy. Their appointments will be critical. Sync climate policy coordination between the secretary of state and SPE Kerry . Clear communication and close coordination between Secretary-designate Blinken and SPE-designate Kerry will be critical for the administration to best leverage the expertise and policy connections of U.S. diplomats, who typically look to their chains of command for instruction. For good, SPE-designate Kerry knows how the department works and how it conducts climate diplomacy, but unity of communication between the secretary’s office and SPE-designate Kerry will be critical for foreign service officers (FSOs) to implement the administration’s climate action agenda with speed and effectiveness. Importantly, it will be the secretary of state and the department’s leadership who will ultimately drive U.S. diplomats to integrate climate change in their conduct of foreign policy. The success of this effort will be key to ensuring that climate action as a department priority is not vulnerable to changes in leadership or administration. China “core policy” offers a model for departmentwide climate policy action. Secretary Pompeo’s mobilization of bureaus and embassies to execute the administration’s China adversary strategy provides an interesting model that the next administration could draw from to unify and direct all department elements to advance its climate change strategy. Secretary Pompeo instructed the deputy secretary to chair a monthly meeting with all bureau assistant secretaries to identify and prioritize specific policy actions and align resources and efforts to act accordingly. The East Asia assistant secretary coordinated departmentwide efforts; each bureau identified a senior official and staff to coordinate China action within the bureau; and each embassy designated China-responsible officers. For example, under the deputy secretary’s direction, relevant regional and technical bureaus coordinated on a worldwide diplomatic strategy to counter China’s commercial 5G buildout by engaging foreign governments, corporations, and other stakeholders to explain the security risks Chinese technology pose to domestic networks.16 For climate purposes, the deputy secretary could adapt this mechanism to coordinate and leverage the efforts of senior State Department officials and ambassadors to engage senior foreign government leaders—particularly at the presidential or prime ministerial level—to address specific climate policy objectives or strategies. That could be at a global level—for example, a global hydrogen research and development strategy—or at a regional level, such as a Gulf states engagement strategy. Administratively, the assistant secretary for Oceans and International Environmental and Scientific Affairs could serve as the department coordinator. Regional bureaus and embassies could create structures to coordinate climate-related work within bureaus and between bureaus and embassies. Climate action on the ground: Ambassadors and embassies The urgency for global action requires the State Department to scrap its past practice of putting U.S. climate diplomacy solely in the hands of Washington-based climate policy experts and instead put its ambassadors, diplomats, and local embassy staff at the forefront of advancing U.S. climate policy in host countries. Climate diplomacy for the early 2020s has a very different charge when compared with the mission during the Obama administration and even earlier. At that time, the State Department was focused on negotiating the new design of an international climate regime, and long-time Washington-based climate experts carried the diplomatic load. FSOs, who often have generalist backgrounds, largely played supporting roles or watched from the side. A smaller team was able to successfully carry out the mission.17 But with the Paris Agreement framework now established, countries are focused on implementing their commitments. Climate policy has pivoted from U.N. negotiations to domestic governance. Governments are deciding development pathways; passing legislation and setting rules; debating economic and energy policies with business and labor; and communicating their climate policy vision to the public. It is at this governance stage where U.S. diplomats—advancing U.S. climate policy with government, business, and civil society—do their best work. To put climate at the center of every embassy’s policy mission, the administration can: Make clear embassy senior leaders’ intent. The president’s letter of instruction to chiefs of mission18 should direct all ambassadors to make climate change a priority issue in their embassies’ work in host countries. Just as the secretary would communicate to the entire department the centrality of climate change, U.S. ambassadors should do the same to embassy staff and in their own diplomacy. Ambassadors should prioritize climate change action appropriately in their Integrated Country Strategy, the strategic and priority-setting policy document for U.S. foreign policy in the host country.19 Institute a whole-of-embassy effort. Economic or science sections traditionally manage U.S. embassies’ climate change diplomacy. But because climate change policy spans the equities of nearly all parts of a typical embassy, the ambassador’s office should lead and direct a holistic approach to the embassy’s policy strategy. Under the deputy chief of mission’s (DCM) direction, for example, the embassy country team should make briefings on embassy actions on climate change a standard agenda item in its regular meeting. Forging a cohesive team that includes State Department economic and public affairs officers; defense attaches; and Foreign Commercial Service, Foreign Agricultural Service, and USAID officers is vital to a successful, full-court press to advance a U.S. climate agenda. Also, U.S. embassies have long benefited from the talent and experience of local professional staff, many of whom previously served in prestigious roles in government, industry, and academia. They are an invaluable resource that embassies should elevate to serve as full partners to advance the U.S. climate agenda. Leverage the diplomatic tool of climate assistance. There have been few more effective tools for U.S. technical agencies and embassies to drive on-the-ground climate policy implementation than the Obama administration’s Global Climate Change Initiative (GCCI), particularly in developing countries. Under the GCCI, the State Department funded the overseas climate-related activities of experts from the U.S. departments of Agriculture, Energy, and the Treasury and the U.S. Environmental Protection Agency,20 who advanced climate policy objectives and built important political and economic connections. The Biden administration should revive and boost GCCI-like activities. As noted above, CAP recommends seeking $25 billion over five years. Launch State Department annual climate country reports. The State Department’s annual Human Rights Country Report is one of the U.S. government’s most powerful instruments for monitoring and potentially driving improved human rights performance around the world.21 An annual State Department Climate Change Country Report could serve a similar catalytic function. Embassies could provide annual updates on host country greenhouse gas emissions; their climate policies and actions; climate adaptation preparedness; transition trends in the power, transportation, and other sectors; and more. Climate country reports could serve to increase transparency of country actions—or inaction and highlight creative solutions. Making climate diplomacy built to last in U.S. foreign relations Nearly all the leadership and management changes recommended in this issue brief are subject to the risk of fading or termination should a subsequent administration take a less urgent approach to climate change. To sustain prioritized climate action, the Biden administration, in any broader State Department reform strategy, should incorporate new measures to ensure climate change is mainstreamed into how the department and the foreign service conduct U.S. foreign relations. The secretary of state and the department leadership team can take administrative measures in the following areas to make “built to last” the goal of embedding climate action into U.S. foreign policy. More people Executing climate action effectively, both under the Biden administration and over the long term, will require many more foreign affairs professionals. The administration should create 500 new foreign service and local U.S. embassy staff positions at the State Department, USAID, the Department of Commerce, and the Department of Agriculture—all dedicated to the international climate brief. An exodus of diplomats in recent years22 might tempt the State Department to direct new officers and resources to traditional foreign policy priority areas. It should resist doing so. Looming global challenges such as climate change require the department to reorient its strategic outlook and resources. More climate-smart people For most foreign affairs professionals, climate change is a subject that is expansive, complex, and new. That can no longer stand. The department should implement training across a range of climate policy functions and at all seniority levels to elevate and sustain climate policy and program management competencies. A departmentwide climate training program should include climate policy familiarization modules at entering-officer orientation, as well as DCM and ambassador courses; required courses on topics such as climate diplomacy, decarbonization policy measures, and climate science for all officers with climate policy responsibilities; and distance learning units on priority climate policy initiatives for all personnel. The department should also offer promising officers one-year external assignments at agencies such as USAID, the Department of Energy, the U.S. Development Finance Corporation, and the U.S. Trade and Development Agency to learn about these agencies’ climate-related tools and capabilities. To realize those training and detail opportunities without compromising the State Department’s operational readiness, the department needs more “float” personnel slots, which the 500 new-hire positions would help make possible. More climate-as-career people The Biden administration can further embed climate change as a core State Department policy priority over time and across changes in administration with changes to organizational incentives that influence the culture of the foreign service.23 Foreign service job assignments and promotion are two areas where the department can act.24 If you were to speak to any FSO, she would tell you that her career path decisions are largely influenced by two incentives: onward job assignments and promotion potential. For any number of historical reasons, the personnel system rewards both in assignments and promotion those officers who specialize in regions—such as Europe, the Middle East, or East Asia—over those who specialize in global or transnational issues, such as climate change, nonproliferation, or refugee matters. To rebalance the system to make climate change a desirable career path for FSOs, the department should take the following actions: Create more embassy climate change jobs. Officers see little foreign service career growth opportunity in climate. At a typical embassy, climate change responsibility is given to one midlevel officer. Supervisors engage on an ad hoc basis, ambassadors and DCMs even less so. The department should create clear career ladder opportunities from midlevel to senior positions, both in Washington and at embassies. Embassies in major capitals should have senior climate officers who lead multiofficer teams. Consider climate performance in foreign service promotion decisions. Given the up-or-out system, all FSOs focus on how a job’s responsibilities and visibility can help them move up the ladder. The foreign service promotion system discourages an officer from considering a climate change assignment or career focused on climate. The system rewards accomplishments that support department-specified priorities, of which climate has long been absent. The department should work with the American Foreign Service Association to add to its promotion precepts a specific expectation that officers demonstrate positive performance on climate to be considered for promotion at each professional level. Reward and recognize climate performance. The department’s servicewide awards program is another signal of the low priority it places on climate change. There are awards for DCM performance, political reporting, consular management, and other areas. There is no department award recognizing foreign service performance on climate change.25 The department should create such an award. Conclusion The majority of Americans expect President-elect Biden to act promptly on climate change, both at home and abroad.26 The gravity of the threat of climate change to the United States and the world requires the Biden administration to make climate change a central focus of U.S. foreign policy, aligning the resources and influence of the United States to help drive global action. The president must lead, but he should put U.S. diplomats and the State Department in the central role for executing this new charge and driving global action. These recommendations should go a long way in enabling them to do so.

#### Biden is currently avoiding disagreements with other WTO members over TRIPS. The plan flips that to create consensus, expending critical diplomatic capital

Day 7-19, Meagan Day is a staff writer at Jacobin. Jacobin, 7-19-21. “Biden Just Turned Down a Golden Opportunity to End Vaccine Apartheid” <https://www.jacobinmag.com/2021/07/biden-administration-covid-19-vaccine-apartheid-global-south-distribution-merkel> brett

The protest on Thursday was organized by a coalition of progressive trade advocacy organizations who object to Merkel’s obstruction of the patent waiver proposal in the World Trade Organization (WTO). The WTO operates by consensus, which means that, in principle, any intransigent party can successfully block the implementation of a policy backed by more than a hundred forty countries. “The protection of intellectual property is a source of innovation and this has to remain so in the future,” Merkel has said in defense of her opposition to the waiver, which would exempt COVID-19 vaccines from the patent protection rules spelled out in the WTO’s Trade-Related Aspects of Intellectual Property Rights Agreement, or TRIPS. To improve global vaccine access, Merkel prefers instead to rely on the COVID-19 Vaccines Global Access initiative (COVAX), a program that has agreements with current vaccine patent holders and would not challenge their intellectual property rights. COVAX caps vaccine doses at 20 percent of a country’s population, and is meant only as a supplement to the ordinary market-based system. Critics say that while it will protect corporate profits, it will be insufficient to end the pandemic worldwide. Merkel’s opposition to a waiver of TRIPS nominally puts her at odds with Biden, who publicly avowed his support for the patent waiver in May. Biden was praised by progressives and censured by the pharmaceutical industry for his position. But now groups who want to see the policy implemented say that Biden isn’t doing enough to convince allies like Merkel and make the idea a reality. The White House meeting on Thursday came and went with no apparent change in Merkel’s position. Biden did not mention the TRIPS waiver in his post-meeting press conference, suggesting either that it was not discussed or that Biden felt no need to publicly pressure Merkel after she privately reiterated her position. Biden and Merkel’s discussion appeared to focus more on Nord Stream 2, a Russian oil pipeline to Germany that Biden worries will give Russia greater influence over the European energy sector and undermine US dominance. He was willing to give airtime to this disagreement, but said nothing about their disagreement over the vaccine patent waiver. “For Merkel to get a high-profile White House victory lap and have Pres. Biden proclaim that she ‘never fails to stand for human dignity’ while Biden has failed to get Merkel to stop blocking the WTO COVID vaccine waiver delivers a punishing blow to efforts to end the pandemic,” said Lori Wallach, director of the group Public Citizen’s Global Trade Watch. “To show global leadership, Biden had to get Germany to stop blocking what he says is a U.S. priority to save tens of millions of lives,” she added. “This summit was a failure.” COVID deaths have risen 40 percent in Africa in the past week alone. Only 1 percent of Africans have been vaccinated, as wealthy nations on other continents have preordered vaccine doses well into the future. Africa’s COVID spike illustrates the urgency of waiving vaccine patents so that global production can scale up immediately, even though to do so would undermine pharmaceutical profits. Every month that passes without a patent waiver, COVID deaths increase in countries without the resources to buy vaccines. So do the chances of viral mutations whose risks won’t necessarily be contained to the Global South. Merkel’s rejection of a TRIPS waiver is a deadly policy rooted in her politics of centrist market liberalism — a politics that, in this case, will result in many more deaths worldwide if not swiftly reversed. Biden just had a chance to take a stand and push for that reversal, but he neglected to spend his political capital pushing the chancellor to get on board with our best shot at ending the pandemic globally. He has taken the right public position on TRIPS, but so far it’s still an open question how serious he is about making it a reality.

#### Diplomatic capital is finite---the plan distracts US focus

Anderson & Grewell 01 Terry L. Anderson is executive director of Political Economy Research Center / J. Bishop Grewell is a research associate with PERC, The Greening of Foreign Policy, Chicago Journal of International Law Fall, 2001 2 Chi. J. Int'l L. 427 (Lexis-Nexis), https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=1422&context=cjil

Greater international environmental regulation can increase international tension. Foreign policy is a bag of goods that includes issues from free trade to arms trading to human rights. Each new issue in the bag weighs it down, lessening the focus on other issues and even creating conflicts between issues. Increased environmental regulations could cause countries to lessen their focus on international threats of violence such as the sale of ballistic missiles or border conflicts between nations. As countries must watch over more and more issues arising in the international policy arena, they will stretch the resources necessary to deal with traditional international issues. As Schaefer (2000, 46) writes, “Because diplomatic currency is finite . . . it is critically important that the United States focus its diplomatic efforts on issues of paramount importance to the nation.

#### Warming encompasses AND outweighs every existential threat

Torres 16 (Phil, affiliate scholar @ Institute for Ethics and Emerging Technologies PhD candidate @ Rice University in tropical conservation biology, Op-ed: Climate Change Is the Most Urgent Existential Risk, <http://ieet.org/index.php/IEET/more/Torres20160807>)

Humanity faces a number of formidable challenges this century. Threats to our collective survival stem from asteroids and comets, supervolcanoes, global pandemics, climate change, biodiversity loss, nuclear weapons, biotechnology, synthetic biology, nanotechnology, and artificial superintelligence. With such threats in mind, an informal survey conducted by the Future of Humanity Institute placed the probability of human extinction this century at 19%. To put this in perspective, it means that the average American is more than a thousand times more likely to die in a human extinction event than a plane crash.\* So, given limited resources, which risks should we prioritize? Many intellectual leaders, including Elon Musk, Stephen Hawking, and Bill Gates, have suggested that artificial superintelligence constitutes one of the most significant risks to humanity. And this may be correct in the long-term. But I would argue that two other risks, namely climate change and biodiveristy loss, should take priority right now over every other known threat. Why? Because these ongoing catastrophes in slow-motion will frame our existential predicament on Earth not just for the rest of this century, but for literally thousands of years to come. As such, they have the capacity to raise or lower the probability of other risks scenarios unfolding. Multiplying Threats Ask yourself the following: are wars more or less likely in a world marked by extreme weather events, megadroughts, food supply disruptions, and sea-level rise? Are terrorist attacks more or less likely in a world beset by the collapse of global ecosystems, agricultural failures, economic uncertainty, and political instability? Both government officials and scientists agree that the answer is “more likely.” For example, the current Director of the CIA, John Brennan, recently identified “the impact of climate change” as one of the “deeper causes of this rising instability” in countries like Syria, Iraq, Yemen, Libya, and Ukraine. Similarly, the former Secretary of Defense, Chuck Hagel, has described climate change as a “threat multiplier” with “the potential to exacerbate many of the challenges we are dealing with today — from infectious disease to terrorism.” The Department of Defense has also affirmed a connection. In a 2015 report, it states, “Global climate change will aggravate problems such as poverty, social tensions, environmental degradation, ineffectual leadership and weak political institutions that threaten stability in a number of countries.” Scientific studies have further shown a connection between the environmental crisis and violent conflicts. For example, a 2015 paper in the Proceedings of the National Academy of Sciences argues that climate change was a causal factor behind the record-breaking 2007-2010 drought in Syria. This drought led to a mass migration of farmers into urban centers, which fueled the 2011 Syrian civil war. Some observers, including myself, have suggested that this struggle could be the beginning of World War III, given the complex tangle of international involvement and overlapping interests. The study’s conclusion is also significant because the Syrian civil war was the Petri dish in which the Islamic State consolidated its forces, later emerging as the largest and most powerful terrorist organization in human history. A Perfect Storm The point is that climate change and biodiversity loss could very easily push societies to the brink of collapse. This will exacerbate existing geopolitical tensions and introduce entirely new power struggles between state and nonstate actors. At the same time, advanced technologies will very likely become increasingly powerful and accessible. As I’ve written elsewhere, the malicious agents of the future will have bulldozers rather than shovels to dig mass graves for their enemies. The result is a perfect storm of more conflicts in the world along with unprecedentedly dangerous weapons. If the conversation were to end here, we’d have ample reason for placing climate change and biodiversity loss at the top of our priority lists. But there are other reasons they ought to be considered urgent threats. I would argue that they could make humanity more vulnerable to a catastrophe involving superintelligence and even asteroids. The basic reasoning is the same for both cases. Consider superintelligence first. Programming a superintelligence whose values align with ours is a formidable task even in stable circumstances. As Nick Bostrom argues in his 2014 book, we should recognize the “default outcome” of superintelligence to be “doom.” Now imagine trying to solve these problems amidst a rising tide of interstate wars, civil unrest, terrorist attacks, and other tragedies? The societal stress caused by climate change and biodiversity loss will almost certainly compromise important conditions for creating friendly AI, such as sufficient funding, academic programs to train new scientists, conferences on AI, peer-reviewed journal publications, and communication/collaboration between experts of different fields, such as computer science and ethics. It could even make an “AI arms race” more likely, thereby raising the probability of a malevolent superintelligence being created either on purpose or by mistake. Similarly, imagine that astronomers discover a behemoth asteroid barreling toward Earth. Will designing, building, and launching a spacecraft to divert the assassin past our planet be easier or more difficult in a world preoccupied with other survival issues? In a relatively peaceful world, one could imagine an asteroid actually bringing humanity together by directing our attention toward a common threat. But if the “conflict multipliers” of climate change and biodiversity loss have already catapulted civilization into chaos and turmoil, I strongly suspect that humanity will become more, rather than less, susceptible to dangers of this sort. Context Risks We can describe the dual threats of climate change and biodiversity loss as “context risks.” Neither is likely to directly cause the extinction of our species. But both will define the context in which civilization confronts all the other threats before us. In this way, they could indirectly contribute to the overall danger of annihilation — and this worrisome effect could be significant. For example, according to the Intergovernmental Panel on Climate Change, the effects of climate change will be “severe,” “pervasive,” and “irreversible.” Or, as a 2016 study published in Nature and authored by over twenty scientists puts it, the consequences of climate change “will extend longer than the entire history of human civilization thus far.” Furthermore, a recent article in Science Advances confirms that humanity has already escorted the biosphere into the sixth mass extinction event in life’s 3.8 billion year history on Earth. Yet another study suggests that we could be approaching a sudden, irreversible, catastrophic collapse of the global ecosystem. If this were to occur, it could result in “widespread social unrest, economic instability and loss of human life.” Given the potential for environmental degradation to elevate the likelihood of nuclear wars, nuclear terrorism, engineered pandemics, a superintelligence takeover, and perhaps even an impact winter, it ought to take precedence over all other risk concerns — at least in the near-term. Let’s make sure we get our priorities straight.

# Case

### Covid

#### They have the burden to prove TRIPS is obstructing vaccine production---no evidence exists.

Spadt and Koopman 5-24 Jonathan H. Spadt & Andrew J. Koopman 5-24, Jonathan H. Spadt is the Chief Executive Officer and President of RatnerPrestia. Andrew J. Koopman, J.D., Temple University Beasley School of Law (2008) Vice President, Intellectual Property Law Society Member, Intellectual Property Moot Court team Staff Writer, International and Comparative Law Journal B.S., Engineering Physics, Cornell University (2005) Minor in Electrical Engineering. 5-24-21, RatnerPrestia. “The “Moral” Waiver of IP Protection For COVID Vaccines: Why The US Proposal Creates More Problems Than It Solves” <https://www.ratnerprestia.com/2021/05/24/the-moral-waiver-of-ip-protection-for-covid-vaccines-why-the-us-proposal-creates-more-problems-than-it-solves/> brett

The reservations expressed by European and US leaders reflect a combination of short term practical concerns and long term policy interests. Most relevant to the goal of the waiver is the notion that IP restrictions, rather than export controls or logistical factors, represent the primary barrier to vaccine distribution. At this point, there is little evidence in support of this notion. In the great majority of nations, no patents have yet issued that would interfere with the manufacture of vaccines. Even were there such patents, the TRIPS Agreement already provides for the grant of compulsory licenses in the event of a national emergency. That such a provision has not yet been invoked is itself a blow to the argument that vaccine patents are interfering with vaccine production.

The consensus opinion is that the primary obstacle to vaccine supply across the globe is distribution. The short term problem of vaccine supply would be more directly remedied not by a waiver of IP rights, but by a willingness of nations with a vaccine surplus and manufacturing wherewithal to share their supply. Indeed, the Biden administration recently announced that 20 million doses of currently authorized vaccines would be shipped overseas beginning in June, on top of an earlier pledge of 60 million doses of the AstraZeneca vaccine once authorized. This commitment by the United States to ship 80 million doses overseas, presumably by the end of June, would be a more effective response to pressure from the EU than the Biden administration’s waiver support.

### AT Mutations

#### You should be skeptical of their ev. Not all mutations exacerbate virus spread, they’re a natural part of viruses and often die out from natural selection

Grubaugh et al 20 [Grubaugh, N.D., Petrone, M.E. & Holmes, E.C. , 2-18-2020, "We shouldn’t worry when a virus mutates during disease outbreaks," Nature Microbiology, <https://www.nature.com/articles/s41564-020-0690-4> [accessed: 9-7-21]//lydia

#### Unlike science fiction, however, the dramatization of virus mutation is not innocuous, and we need only look to other recent outbreaks to realize the extent to which overinterpreting the impact of mutation directly affects our health and safety. For example, a mutation in the Zika virus membrane region (prM-S139N) emerged in a viral lineage preceding the devastating epidemic in the Americas. Both in vitro and mouse studies suggested that this mutation enhanced neurovirulence[3](https://www.nature.com/articles/s41564-020-0690-4#ref-CR3). Yet, before this finding could be confirmed, misinformation began to circulate that this mutation was the cause of congenital Zika syndrome, specifically microcephaly. When Zika was detected in India in 2018, these false claims motivated the Indian government to develop policies under the incorrect assumption that the emergent virus could not cause foetal harm, citing the absence of the ‘microcephaly mutation’ to defend their decisions[4](https://www.nature.com/articles/s41564-020-0690-4#ref-CR4). In this case and that of SARS-CoV-2, mutations consume the narrative, even though individual mutations seldom become fixed during outbreaks nor modulate complex virological traits. Rather, mutation is a humdrum aspect of life for an RNA virus. Because these viruses employ an intrinsically error-prone RNA polymerase for replication, their genomes will accumulate mutations during every copying cycle. Moreover, these cycles can occur on the order of hours, ensuring that a diverse virus population will be generated within a single infected host. While this amazing capacity to mutate fuels the engine of evolutionary change, most mutations adversely impact some aspect of virus function and are removed by natural selection. Hence, although a mutation that changes how a virus is transmitted or its virulence may readily appear in a virus population, it will not spread to high frequencies unless it is selectively advantageous. At the same time, epidemiologically relevant traits like the viral mode of transmission and virulence can be controlled by multiple genes. As such, they are likely beholden to stringent evolutionary constraints because they require multiple mutations to evolve. Indeed, across a broad swathe of viruses it is unusual to find those that have changed or expanded their mode of transmission over short evolutionary time-scales despite high rates of mutation[5](https://www.nature.com/articles/s41564-020-0690-4#ref-CR5). Together, these constraints beget uncertainty around what characteristics are favoured by natural selection and how quickly they will spread in a population. Moreover, the role of natural selection in virus evolution is not easily predicted, rendering rampant speculation around the evolutionary trajectory of a virus during a nascent outbreak investigation especially problematic. The pervasive claim that a virus will mutate to become more virulent during an outbreak is particularly illustrative of this phenomenon, even though this spectre of a ‘super killer’ virus is baseless. In reality, the evolution of virulence is a highly complex topic that has inspired extensive research on evolutionary theory and debate[6](https://www.nature.com/articles/s41564-020-0690-4#ref-CR6). Mutations can also make a virus either more or less virulent. A common idea is that virulence will only change — either upwards or downwards — if it increases the transmission rate of the virus, which effectively means an increase in the number of virus ‘offspring’. However, high virulence may (although by no means always) reduce transmissibility if the host is too sick to expose others. Without information on the precise evolutionary forces and selection pressures in operation, predicting how virulence might evolve is an extremely difficult and perhaps futile task. This is not to say that mutations and natural selection don’t occur during disease outbreaks, but rather that their epidemiological relevance is often hard to quantify. Mutations are requisite during host jumps, for example, when a virus ‘spills over’ from an animal reservoir into humans or utilizes an alternate arthropod vector for transmission. Mutations at amino acid 30 in the Gag protein of human immunodeficiency virus-1 (HIV-1) have been proposed as adaptations for the simian immunodeficiency virus (SIV) ancestors in chimpanzees to increase infectivity in humans[7](https://www.nature.com/articles/s41564-020-0690-4#ref-CR7). In chikungunya virus, a single mutation (E1-A226V) appearing during epidemics has been suggested as a signature of adaptation to an alternate mosquito vector, Aedes albopictus[8](https://www.nature.com/articles/s41564-020-0690-4#ref-CR8), while a single mutation (GP-A82V) in Ebola virus increased infection of human cells[9](https://www.nature.com/articles/s41564-020-0690-4#ref-CR9). It is also hypothesized that mutations in highly pathogenic avian influenza A(H5N1) could lead toward more efficient human-to-human transmission[10](https://www.nature.com/articles/s41564-020-0690-4#ref-CR10), although thankfully this has yet to occur. While there are many examples of mutations that alter virulence or cause drug resistance and hence impact human health[11](https://www.nature.com/articles/s41564-020-0690-4#ref-CR11), speculating about the phenotype of any new mutation can be dangerous during fast-moving outbreaks. It takes a non-trivial amount of effort to experimentally and epidemiologically verify these phenotypes. These warnings will probably not halt the question as to whether mutations will arise in SARS-CoV-2, enabling it to spread more efficiently between humans or generate a higher case fatality rate. In response, we can look to the 2002–2003 SARS-CoV epidemic. Large deletions in the open reading frame 8 (ORF8) region and mutations in the spike (S) protein were discovered during the early stages of the outbreak and eventually dominated the epidemic, suggesting that these were adaptations to humans[12](https://www.nature.com/articles/s41564-020-0690-4#ref-CR12),[13](https://www.nature.com/articles/s41564-020-0690-4#ref-CR13). Based on this observation, some hypothesized that virus genetic changes in part drove the SARS epidemic, but this claim is unsubstantiated[14](https://www.nature.com/articles/s41564-020-0690-4#ref-CR14). So, could SARS-CoV-2 adapt in the same way? Yes. Will adaptation precipitate more deaths? Unlikely. It is time to reshape our conception of mutations. Mutations are not indicative of outlandish and devastating new viral characteristics. Instead, they can inform our understanding of emerging outbreaks. Any claims over the consequences of mutation demand careful experimental and epidemiological evidence. Mutation is an inevitable consequence of being a virus. The pattern and time course of mutations in a virus genome are key for estimating phylogenetic trees, which, in turn, depict the course epidemics in effectively real time[15](https://www.nature.com/articles/s41564-020-0690-4#ref-CR15). The developing field of genomic epidemiology is currently being employed in the mitigation and control of the SARS-CoV-2 outbreak. The rapid and open access deposition of virus genomes, most of which differ by mutation, is enabling precise investigations into patterns of spread. To this end, websites like [Virological.org](http://virological.org/) and [Nextstrain.org](https://nextstrain.org/) are leading the charge. Rather than fearing mutation, perhaps it is now time to embrace it.

### AT McPherson

#### McPherson is a clown and has been fact checked multiple times – he’s wrong, reduction of aerosols from COVID doesn’t cause climate acceleration.

Mckay 8 -1 [Dr. David A. McKay, Climate-Biosphere Scientist, 4-15-19, last updated 8-1-21, "Fact-Check: is “global dimming” shielding us from catastrophe?," climatetippingpoints.info, <https://climatetippingpoints.info/2019/04/15/fact-check-is-global-dimming-shielding-us-from-catastrophe/> [accessed: 9-5-21] //lydia

The big difference between aerosols and greenhouse gases though, is that aerosols [have a very short lifespan in the atmosphere](https://earthobservatory.nasa.gov/features/Aerosols/page3.php), falling out of the atmosphere after only a few weeks. This has led to the fear that shutting down heavy carbon emitters like coal power stations as part of decarbonisation would lead to a rapid warming spike as all the aerosols disappear, risking passing imminent climate tipping points. This scenario is sometimes called the dimming paradox, or the “[McPherson Paradox](https://guymcpherson.com/2019/10/the-mcpherson-paradox-very-briefly/)” after one well-known and controversial proponent. But human-made aerosols have many sources, from power plants to cars, fires, and agriculture. An immediate removal of all human-made aerosols over only a few years is extremely unlikely, with decarbonisation likely taking decades. It’s also worth remembering that some aerosols, such as black carbon (soot from incomplete burning) in smog and “[brown clouds](https://www.nsf.gov/news/news_summ.jsp?cntn_id=109712)“, actually cause warming as well (by absorbing some incoming solar energy rather than scattering it), and so driving down aerosol emissions from industrial smog would reduce a source of warming as well as cooling. And as discussed in the last section, while a drop in aerosol emissions would have a rapid regional effect it’d need to be sustained for years for the whole global climate system to respond. This was illustrated by the coronavirus shutdown – while some feared the [~17% drop in CO2 (and therefore similar for aerosols) emissions in April 2020](https://www.nature.com/articles/s41558-020-0797-x) would [lead to a catastrophic warming spike](https://opastonline.com/wp-content/uploads/2020/04/will-covid-19-trigger-extinction-of-all-life-on-earth-eesrr-20-.pdf) by [November](https://climatetippingpoints.info/2019/04/15/fact-check-is-global-dimming-shielding-us-from-catastrophe/#comment-2202), [emissions later rebounded](https://www.carbonbrief.org/global-carbon-project-coronavirus-causes-record-fall-in-fossil-fuel-emissions-in-2020) and [2020 ended up being only marginally warmer than 2019](https://www.theguardian.com/environment/2021/jan/08/climate-crisis-experts-2020-joint-hottest-year-ever-recorded). Subsequent [modelling](https://doi.org/10.1029/2020GL091805) showed that although aerosol masking dropped by up to ~0.3 W/m² during 2020 this will only lead to a temporary warming boost of 0.1-0.3oC regionally and 0.03oC globally. As a result, any warming from aerosol reduction would be more gradual and partial than portrayed in the dimming paradox scenario. The [most recent IPCC models](https://doi.org/10.1029/2020GL091805) (CMIP6) project aerosol RF to fall to levels last seen in the early 20th Century (from 0.9 to ~0.35 W/m²) by 2100, a significant but by no means sudden reduction. Even if an immediate phase-out of aerosols along with CO2 happened, more realistic modelling for the 2018 [IPCC Special Report on 1.5oC](https://www.ipcc.ch/sr15/) showed that the actual aerosol warming bump would be at most a temporary ~0.2oC warming after a decade (the green-vs-dotted blue curves below, while the yellow-vs-pink curve isolates the aerosol effect, giving ~0.15oC after a few years and ~0.25oC by 2100), which is equivalent to a about a decade’s worth of the current global warming trend. This is less than the ~0.4-0.8oC calculated above, as this modelling takes account of the Earth system feedbacks that in this case reduce the impact of aerosol reductions. A controlled phase-out of aerosol emissions alongside equally short-lived but strongly-warming methane and N2O (shown by the yellow curve below) would help limit the immediate warming impacts and reduce the risk of hitting any climate tipping points in the process. Chart

Description automatically generated

Projections of committed warming scenarios from the 2018 [IPCC special report on 1.5oC](https://www.ipcc.ch/sr15/) (Figure 1.5). If we stopped all emissions now, we’d get the yellow curve; if we stopped everything but aerosols we’d get the pink curve, and if we stopped CO2 & aerosols but not methane we’d get the green curve. A gradual phase out of CO2 emissions from 2020 onwards could still keep warming to around 1.5oC by 2100 (dotted blue line). And what about the often-mentioned temperature jump in the US after September 11th, 2001? This was likely more to do with the impact of the disappearance in contrail clouds (the thin strips of cloud left behind by planes) on the [temperature difference between night and day](https://web.archive.org/web/20160411094048/http:/www.atmos.washington.edu/~rennert/etc/courses/pcc587/ref/Travis-etal2002_Nature.pdf) (with warmer days and cooler nights), with no evidence for an overall warming effect. It also represents an aerosol-cloud effect that is specific to aeroplanes, and wouldn’t apply in the same way to shutting down power stations. And while it’s true that a sudden drop in other aerosols would have a rapid effect locally (with the days feeling warmer as more solar radiation makes it through), as mentioned [above](https://climatetippingpoints.info/2019/04/15/fact-check-is-global-dimming-shielding-us-from-catastrophe/#Aerosol_Cooling_Calcs) it would still take a widespread shutdown over several years to build up a significant effect on global average temperatures. Finally, a key problem with avoiding limiting aerosol emissions by keeping heavy polluters going is that further carbon emissions guarantees further warming anyway, even if part of it continues to be hidden by aerosols. Overall it’s probably worth experiencing a decade’s worth of global warming from reduced aerosols now instead of inexorably building up ever more decades of warming from continued carbon emissions in the future. [Summary](https://climatetippingpoints.info/2019/04/15/fact-check-is-global-dimming-shielding-us-from-catastrophe/#Summary) While the total removal of human-made aerosols theoretically leads to a short-term warming of up to ~0.4oC (and ~0.6-0.8oC by 2100), an abrupt end to all aerosol emissions (but not methane or N2O emissions) at once is very unlikely, and other feedbacks would reduce this warming bump too. Decarbonisation will take decades, and aerosols come from a wide variety of sources beyond just the heaviest emitting power stations. IPCC modelling projects that even a rapid phase out of aerosol emissions would lead to a temporary ~0.2oC of warming – the equivalent of around a decade more of the current warming trend – which is preferable to carrying on emitting carbon indefinitely, and can be partly avoided by also reducing emissions of short-lived greenhouse gases like methane and N2O.

### AT COVID causes war

#### Relationship between COVID and conflict unclear but still flows neg—empirics prove

Salemi 20 Colette Salemi [microeconomist PhD student in applied economics at the University of Minnesota. Her research focuses on conflict, forced displacement, environmental degradation and their intersections.], 10-15-2020, "Analysis," Washington Post, <https://www.washingtonpost.com/politics/2020/10/15/does-covid-19-raise-risk-violent-conflict-not-everywhere/> EH

The situation in Iraq illustrates how the coronavirus threat and policy responses to the pandemic could lead to an increase in violent conflict. But elsewhere in the world, researchers who tally conflict-event counts see stagnant or even falling numbers. And in some countries, conflict trends don’t appear to be responding to covid-19 at all. My research with Jeff Bloem documents considerable differences in the frequency of conflict events across several countries in recent months. Our findings suggest that the pandemic-conflict relationship seen in Iraq does not appear to exist in many other countries. How we did our research We used the Armed Conflict Location and Event Data (ACLED), a database that counts the number of conflict events daily around the world. For 2019 and 2020, ACLED includes more than 100 countries in Africa, Asia, Latin America and Eastern Europe — and tracks three categories of violent conflict: battles, violence against civilians and explosions/remote violence. We examine trends in the number of conflict events over time. To see whether the trend changes in response to covid-19, we look at what happened after the World Health Organization declared a global pandemic (March 11) or the country declared a lockdown. The relationship between pandemics and conflict is theoretically unclear. In some countries, job losses from the covid-19 pandemic mean people have fewer income-generating options — that can make participation in violence seem a more viable alternative. But if market disruptions and reduced global demand are driving down the value of natural resources such as oil wells, then we may see less conflict over control of such resources. We then conducted case studies based on our knowledge of countries with high rates of violent conflict before covid-19. These include countries with active civil wars (such as Syria) as well as countries with violent militia groups (such as the Philippines). Conflict during the coronavirus pandemic varies greatly Worldwide, we didn’t observe an increase in violent conflict. If anything, conflict has decreased, as the figure below shows.

Chart, line chart

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Violent conflict between March and August 2020 was 23 percent lower than violent conflict during the same period in 2019. Comparing these time periods, battles are down 20 percent and remote violence and bombings are down 40 percent. But violence against civilians — the deliberate attack of unarmed noncombatants by armed groups — continued at similar rates globally. Do these results suggest that covid-19 is fueling reductions in conflict? Probably not — in Syria, for instance, other factors may explain the declines. On March 5, Turkey and Russia brokered a cease-fire agreement covering the Idlib province in Syria. Idlib is the final front of the Syrian government campaign, so this cease fire led to a dramatic decline in violent events nationwide. But the Idlib cease fire wasn’t motivated by covid-19, and would have taken place anyway, pandemic or no pandemic. So even when violence is falling in the covid-19 era, we have to recognize that declines could be driven by events that happened to take place around the same time as the pandemic’s arrival. The same could be true in cases where violent conflict increased — these upticks in violence could have little to do with covid-19. In the ongoing war between Libya’s Government of National Accord (GNA) and the Libyan National Army (LNA), the number of violent events rose steadily in the first half of 2020. The trend line does not change at all when Libya started to respond to covid-19 in March. Libya’s daily violent-incident counts began to fall in late spring, which corresponds with the GNA’s successful seizure of critical holdings from the LNA militia. These results suggest that the GNA and LNA continued their campaigns relatively undeterred by the pandemic. Conflict eventually declined — but this largely reflects the LNA’s retreat. What about other countries? In places with active rebel groups and militias, such as the Philippines and Iraq, we find mixed results. Reports from both countries suggest that rebel groups and government officials (in the Philippines, but not Iraq) are increasing attacks to take advantage of the opportunities in the covid-19 climate. We see little if any change in the number of violent-conflict events per day in the Philippines. But we do see evidence of escalating conflict in Iraq (see figure), much of it attributed to a rise in Islamic State activity. What happens in the Philippines is not an exception. While violent conflict rose in Nigeria for some time, trends are relatively unchanged in Somalia and Congo. These mixed outcomes suggest that there’s still much to learn about pandemics and conflict.

## Legitimacy

#### The WTO is a central factor in increasing carbon emissions – causes warming

Bello 08Walden, senior analyst at the Bangkok-based research and advocacy institute Focus on the Global South and professor at the University of the Philippines, July 28, “Derail Doha, Save the Climate”, <http://www.commondreams.org/views/2008/07/29/derail-doha-save-climate/> brett

There’s something surreal about the ongoing World Trade Organization talks in Geneva, which aim at coming up with a new agreement to bring down tariffs in order to expand world trade and resuscitate global growth. In the face of the looming specter of climate change, these negotiations amount to arguing over the arrangement of deck chairs while the Titanic is sinking. Indeed, one of the most important steps in the struggle to come up with a viable strategy to deal with climate change would be the derailment of the so-called “Doha Round.” Global trade is carried out with transportation that is heavily dependent on fossil fuels. It’s estimated that about 60% of the world’s use of oil goes to transportation activities which are more than 95% dependent on fossil fuels. An OECD study estimated that the global transport sector accounts for 20-25% of carbon emissions, with some 66% of this figure accounted for by emissions in the industrialized countries. Global Trade: Deeply Dysfunctional From the point of view of environmental sustainability, global trade has become deeply dysfunctional. Take agricultural trade. As the International Forum on Globalization has pointed out, the average plate of food eaten in Western industrial food-importing nations is likely to have traveled 1,500 miles from its source. Long-distance travel contributes to the absurd situation wherein “three times more food is used to produce food in the industrial agricultural model than is derived in consuming it.” The WTO has been a central factor in increasing carbon emissions from transport. A study by the OECD done in the mid-nineties estimated that by 2004, the year marking the full implementation of free-trade commitments under the WTO’s Uruguay Round, there would have been an increase in the transport of internationally traded goods by 70% over 1992 levels. This figure, notes the New Economics Foundation, “would make a mockery” of the Kyoto Protocol’s mandatory emissions reduction targets for the industrialized countries. Transportation: More Fossil Intensive than Ever Ocean shipping accounts for nearly 80% of the world’s international trade in goods. The fuel commonly used by ships is a mixture of diesel and low-quality oil known as “Bunker C,” which has high levels of carbon and sulfur. As Jerry Mander and Simon Retallack point out, “If not consumed by ships, it would otherwise be considered a waste product.” Aviation, which has the highest growth rate as a mode of transport, is also the fastest growing source of greenhouse gas emissions, with its consumption of fuel expected to rise by 65% from 1990 levels by 2010, according to one study cited by the New Economics Foundation. Other estimates are more pessimistic, with the Intergovernmental Panel on Climate Change (IPCC) suggesting that fuel consumption by civil aviation is going up at the rate of three percent a year and could rise by nearly 350% from 1992 levels by 2050. Note Mander and Retallack: “Each ton of freight moved by plane uses forty nine times as much energy per kilometer as when it’s moved by ship….A two-minute takeoff by a 747 is equal to 2.4 million lawn mowers running for twenty minutes.” In support of trade expansion and global economic growth, authorities have by and large not taxed aviation fuel as well as marine bunker fuel, which now account for 20% of all emissions in the transport sector. Along with fossil-fuel-intensive air transport, fossil-fuel-intensive road transport has also been favored by the expansion of world trade, instead of modes with less emission intensities like rail and marine traffic. In the European Union, for instance, the focus on building up a road transport network led an OECD study to comment that “the way in which the EU liberalization policy has been implemented has favored the less environment-friendly modes and accelerated the decline of rail and inland waterways.” Decoupling Growth and Energy: a Panacea There has been talk about decoupling trade and growth from energy or shifting from fossil fuels to other, less carbon-intensive energy sources. The reality is that the other energy sources being seriously considered are either dangerous, like nuclear power; with deleterious side-effects, like biofuels’ negative impact on food production; or science fiction as this stage, like carbon sequestration and storage technology. For the foreseeable future, trade expansion and global growth will fall in line with their historical trajectory of being correlated with increased greenhouse gas emissions. A sharp U-turn in consumption and growth in the developed countries and a significant decrease in global trade are unavoidable if we are to have a viable strategy against climate change. This will set the stage for a reduction in greenhouse gas emissions, including from the energy-intensive transportation sector. The outcome of the Doha negotiations will determine whether free trade will intensify or lose momentum. A successful conclusion to Doha will bring us closer to uncontrollable climate change. It will continue what the New Economics Foundation describes as “free trade’s free ride on the global climate.” A derailment of Doha won’t be a sufficient condition to formulate a strategy to contain climate change. But given the likely negative ecological consequences of a successful deal, it’s a necessary condition.

#### CA Torres from the dip cap DA—climate change causes extinction

#### Free trade causes, not prevents, war:

#### 1 -- Uncertainty.

Spaniel & Malone 19 [William Spaniel, Department of Political Science, University of Pittsburgh. Iris Malone, Department of Political Science, Stanford. The Uncertainty Tradeoff: Re-Examining Opportunity Costs and War. March 5, 2019. <https://wjspaniel.files.wordpress.com/2019/03/uncertainty-tradeoff-final.pdf>] brett

This paper has more general implications for trade-conflict research. It complements growing calls to disaggregate the effects of instruments like trade (Martin et al. 2008). Empirical analyses must carefully trace what precisely parties do not know about each other to draw the correct inference. It also suggests states should be careful in interpreting how other states value or benefit from mutual trade flows. A free trade agreement championed by one state may be perceived as relatively less beneficial in another state. This uncertainty may undermine the credibility to abide by the agreement in the long-run.

We also highlight the need for future research to consider screening incentives in trade deals themselves. Although the proposer benefits from greater trade—both from the direct economic benefit and indirect ability to steal more surplus from the receiver— trade can harm unresolved receivers and incentivize screening. This could generate some constraints in the deals a state is willing to sign, in fear that the rearranged incentives under uncertainty could hurt its ability to effectively bluff later. A more unified approach to trade and crisis negotiations would yield additional interesting insights.

Moving forward, the results speak to other lines of research in international relations theory predicated on changing costs of conflict. We couched our results in the interdependence literature due its clear application. However, the comparative static speaks to cases where the receiver’s costs increase more generally.23 Framed this way, the results have clear implications for other literatures. For example, standard nuclear deterrence theory argues that possessing nuclear weapons increases the costs of war for potential challengers due to the risk of a retaliatory nuclear response (Morgenthau 1961, 280; Gilpin 1983, 213-219). The logic of alliance formation similarly relies on the assumption that entering these pacts induces peace by raising an opponent’s costs of conflict (Morrow 1994). Together, these mechanisms assume raising the costs of war should decrease conflict. Our results demonstrate this effect is likely more conditional than previously realized. We find increased costs of conflict can exacerbate issues with uncertainty over resolve even if both states possess destructive weaponry. This promises to shed new insights into how raising costs affects deterrence and coercive bargaining in other contexts.

#### 2 -- Asymmetry.

Lucas Hahn 16. Bryant University. April, 2016. Global Economic Expansion and the Prevalence of Militarized Interstate Disputes. <https://digitalcommons.bryant.edu/honors_economics/24/> brett \*MIDs = Militarized Interstate Disputes

3. Neo-Marxist Views on Asymmetrical Trade One of the most supported arguments against the notion that economic expansion promotes peace is that trade, brought about by economic expansion, actually increases MIDs. Many authors have in fact argued that increased economic interdependence and increased trade may have, in some ways, “cheapened war”, and thus made it easier to wage war more frequently (Harrison and Nikolaus 2012). Neo-Marxists and Dependency Theorists argue that the notion that trade promotes peace often depends on the balance of trade between two nations with a trading relationship. If the two nations have a symmetrical trading relationship, then both nations benefit from trade equally and may thus, engage in less conflict just as proposed by many liberal theorists. However, more often than not, the trading relationship between two nations may be asymmetrical. In this case, one nation benefits more than the other. Furthermore, one nation is often more dependent on trade with its partner than the partner is with it. These circumstances can breed violent conflicts (Barbieri and Schneider 1999). Barbieri’s (1996, 40) regression analyses have supported these claims. She found that when dyads (pairs of nation-states) are highly interdependent, they are nearly 25 times more likely to engage in armed conflict than when the dyads are not interdependent. Ultimately, she came to the conclusion that there seems to be a “hurdle effect”. Up to a point trade does seem to promote peace. However, after that point, the balance of trade often becomes disproportionate between two nations and as a result trade promotes conflict.

#### Both of which breed suspicion, which is a much likelier cause for escalation.

Levy & Thompson 10 (Jack S & William R; Levy is Board of Governors' Professor of Political Science at Rutgers University, former president of the International Studies Association, Affiliate at the Saltzman Institute of War and Peace Studies at Columbia University; Thompson is Distinguished Professor and the Donald A. Rogers Professor of Political Science at Indiana University; 2010; “The Dyadic Interactions of States”; *Causes of War*; pp. 72-75, published by Wiley-Blackwell)

Realist and rationalist critiques Realists, who share the economic nationalism and statist orientation of the old mercantilists, criticize the liberal economic theory of peace on a number of grounds. First of all, they argue (as do some non-realists) that even if it were true that trade has a pacifying effect, the magnitude of the impact of trade on decisions for war and peace is small relative tothat of military and diplomatic considerations (Buzan, 1984 ; Levy, 1989b ). Realists, like mercantilists, argue that states are motivated primarily by power and that economic opportunity costs of war are minor in the context of the long-term struggle for power. Were the Western liberal democracies seriously concerned about the short-term loss of trade when they made decisions to go to war against the hegemonic threats posed by Germany in 1914 and again in 1939? Realists also argue that trade and other forms of economic interdependence can actually increase the level of militarized conflict rather than reduce it (Barbieri, 2002 ). As Rousseau (cited in Hoffmann, 1963 :319) argued, “…interdependence breeds not accommodation and harmony, but suspicion and incompatibility. ”Among other things, interdependence creates increased opportunities for conflict. The greater the interdependence between states, the greater the number of things to argue about. In addition, whereas liberals argue that economic interdependence creates mutual dependence and incentives to avoid war, realists argue that interdependence may also be asymmetrical. Each is dependent on the other, but the degree of dependence is uneven. The less dependent party may be tempted to use economic coercion to exploit the adversary’s vulnerabilities and influence its behavior relating to security as well as economic issues. 32 These can lead to retaliatory actions, conflict spirals, and war. 33