## 1

### DA – Innovation

#### Biotech industry strong now – new innovation and R&D coming

Cancherini et al. 4/30 [Laura, Engagement Manager @ McKinsey & Company, Joseph Lydon, Associate Partner @ McKinsey & Company, Jorge Santos Da Silva, Senior Partner at McKinsey & Company, and Alexandra Zemp, Partner at McKinsey & Company] “What’s ahead for biotech: Another wave or low tide?“, McKinsey & Company, 4-30-2021, <https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/whats-ahead-for-biotech-another-wave-or-low-tide> //ajs

As the pandemic spread across the globe in early 2020, biotech leaders were initially pessimistic, reassessing their cash position and financing constraints. When McKinsey and BioCentury interviewed representatives from 106 biotech companies in May 2020,4 half of those interviewed were expecting delays in financing, and about 80 percent were tight on cash for the next two years and considering trade-offs such as deferring IPOs and acquisitions. Executives feared that valuations would decline because of lower revenue projections and concerns about clinical-trial delays, salesforce-effectiveness gaps, and other operational issues.

Belying this downbeat mood, biotech has in fact had one of its best years so far. By January 2021, venture capitalists had invested some 60 percent more than they had in January 2020, with more than $3 billion invested worldwide in January 2021 alone.5 IPO activity grew strongly: there were 19 more closures than in the same period in 2020, with an average of $150 million per raise, 17 percent more than in 2020. Other deals have also had a bumper start to 2021, with the average deal size reaching more than $500 million, up by more than 66 percent on the 2020 average (Exhibit 3).6

What about SPACs?

The analysis above does not include special-purpose acquisition companies (SPACs), which have recently become significant in IPOs in several industries. Some biotech investors we interviewed believe that SPACs represent a route to an IPO. How SPACs will evolve remains to be seen, but biotechs may be part of their story.

Fundamentals continue strong

When we asked executives and investors why the biotech sector had stayed so resilient during the worst economic crisis in decades, they cited innovation as the main reason. The number of assets transitioning to clinical phases is still rising, and further waves of innovation are on the horizon, driven by the convergence of biological and technological advances.

In the present day, many biotechs, along with the wider pharmaceutical industry, are taking steps to address the COVID-19 pandemic. Together, biotechs and pharma companies have [more than 250 vaccine candidates in their pipelines](https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/on-pins-and-needles-will-covid-19-vaccines-save-the-world), along with a similar number of therapeutics. What’s more, the crisis has shone a spotlight on pharma as the public seeks to understand the roadblocks involved in delivering a vaccine at speed and the measures needed to maintain safety and efficacy standards. To that extent, the world has been living through a time of mass education in science research and development.

Biotech has also benefited from its innate financial resilience. Healthcare as a whole is less dependent on economic cycles than most other industries. Biotech is an innovator, actively identifying and addressing patients’ unmet needs. In addition, biotechs’ top-line revenues have been less affected by lockdowns than is the case in most other industries.

Another factor acting in the sector’s favor is that larger pharmaceutical companies still rely on biotechs as a source of innovation. With the [top dozen pharma companies](https://www.mckinsey.com/business-functions/m-and-a/our-insights/a-new-prescription-for-m-and-a-in-pharma) having more than $170 billion in excess reserves that could be available for spending on M&A, the prospects for further financing and deal making look promising.

For these and other reasons, many investors regard biotech as a safe haven. One interviewee felt it had benefited from a halo effect during the pandemic.

More innovation on the horizon

The investors and executives we interviewed agreed that biotech innovation continues to increase in quality and quantity despite the macroeconomic environment. Evidence can be seen in the accelerating pace of assets transitioning across the development lifecycle. When we tracked the number of assets transitioning to Phase I, Phase II, and Phase III clinical trials, we found that Phase I and Phase II assets have transitioned 50 percent faster since 2018 than between 2013 and 2018, whereas Phase III assets have maintained much the same pace. There could be many reasons for this, but it is worth noting that biotechs with Phase I and Phase II assets as their lead assets have accounted for more than half of biotech IPOs. Having an early IPO gives a biotech earlier access to capital and leaves it with more scope to concentrate on science.

Looking forward, the combination of advances in biological science and accelerating developments in technology and artificial intelligence has the potential to take innovation to a new level. A [recent report](https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/the-bio-revolution-innovations-transforming-economies-societies-and-our-lives) from the McKinsey Global Institute analyzed the profound economic and social impact of biological innovation and found that biomolecules, biosystems, biomachines, and biocomputing could collectively produce up to 60 percent of the physical inputs to the global economy. The applications of this “Bio Revolution” range from agriculture (such as the production of nonanimal meat) to energy and materials, and from consumer goods (such as multi-omics tailored diets) to a multitude of health applications.

#### Strong IPR is key to innovation – empirics and FDI

Ezell and Cory 19 [Stephen Ezell, BS from School of Foreign Service at Georgetown, VP of global innovation policy at Information Technology and Innovation Foundation. Nigel Cory, MA in public policy from Georgetown, BA in international business from Griffith University, Associate Director of trade policy at Information Technology and Innovation Foundation, former researcher in the Southeast Asia Program at the Center for Strategic and International Studies.] “The Way Forward for Intellectual Property Internationally,” Information Technology and Innovation Foundation, April 25, 2019, <https://itif.org/publications/2019/04/25/way-forward-intellectual-property-internationally> TG

* FDI – foreign direct investment

IPRs Strengthen Innovation

Intellectual property rights power innovation. For instance, analyzing the level of intellectual property protections (via the World Economic Forum’s Global Competitiveness reports) and creative outputs (via the Global Innovation Index) shows that countries with stronger IP protection have more creative outputs (in terms of intangible assets and creative goods and services in a nation’s media, printing and publishing, and entertainment industries, including online), even at varying levels of development.46

IPR reforms also introduce strong incentives for domestic innovation. Sherwood, using case studies from 18 developing countries, concluded that poor provision of intellectual property rights deters local innovation and risk-taking.47 In contrast, IPR reform has been associated with increased innovative activity, as measured by domestic patent filings, albeit with some variation across countries and sectors.48 For example, Ryan, in a study of biomedical innovations and patent reform in Brazil, found that patents provided incentives for innovation investments and facilitated the functioning of technology markets.49 Park and Lippoldt also observed that the provision of adequate protection for IPRs can help to stimulate local innovation, in some cases building on the transfer of technologies that provide inputs and spillovers.50 In other words, local innovators are introduced to technologies first through the technology transfer that takes place in an environment wherein protection of IPRs is assured; then, they may build on those ideas to create an evolved product or develop alternate approaches (i.e., to innovate). Related research finds that trade in technology—through channels including imports, foreign direct investment, and technology licensing—improves the quality of developing-country innovation by increasing the pool of ideas and efficiency of innovation by encouraging the division of innovative labor and specialization.51 However, Maskus notes that without protection from potential abuse of their newly developed technologies, foreign enterprises may be less willing to reveal technical information associated with their innovations.52 The protection of patents and trade secrets provides necessary legal assurances for firms wishing to reveal proprietary characteristics of technologies to subsidiaries and licensees via contracts.

The relationship between IPR rights and innovation can also be seen in studies of how the introduction of stronger IPR laws, with regard to patents, copyrights, and trademarks, affect R&D activity in an economy. Studies by Varsakelis and by Kanwar and Evenson found that R&D to GDP ratios are positively related to the strength of patent rights, and are conditional on other factors.53 Cavazos Cepeda et al. found a positive influence of IPRs on the level of R&D in an economy, with each 1 percent increase in the level of protection of IPRs in an economy (as measured by improvements to a country’s score in the Patent Rights Index) equating to, on average, a 0.7 percent increase in the domestic level of R&D.54 Likewise, a 1 percent increase in copyright protection was associated with a 3.3 percent increase in domestic R&D. Similarly, when trademark protection increased by 1 percent, there was an associated R&D increase of 1.4 percent. As the authors concluded, “Increases in the protection of the IPRs carried economic benefits in the form of higher inflows of FDI, and increases in the levels of both domestically conducted R&D and service imports as measured by licensing fees.”55 As Jackson summarized, regarding the relationship between IPR reform and both innovation and R&D, and FDI, “In addition to spurring domestic innovation, strong intellectual property rights can increase incentives for foreign direct investment which in turn also leads to economic growth.”56

#### COVID exceptions erode IP policies broadly.

PRMA 21 The Pharmaceutical Research and Manufacturers of America SPECIAL 301 SUBMISSION 2021 <https://phrma.org/-/media/Project/PhRMA/PhRMA-Org/PhRMA-Org/PDF/P-R/PhRMA_2021-Special-301_Review_Comment-1.pdf> SM

Moreover, some countries are using the COVID-19 pandemic opportunistically to advance longstanding industrial policies to further erode intellectual property policies. India and South Africa are key sponsors of a proposal at the WTO TRIPS Council calling to eliminate for an indefinite term certain WTO obligations to grant IP on a wide range of technologies related to COVID-19. The proposal marks a significant escalation in anti-IP global activism and will further polarize legitimate conversations on countries’ engagement to combat the pandemic. The proposal will do nothing to address the production and distribution challenges for making COVID-19 vaccines globally available. If anything the proposals threaten to undermine the ability to respond to another pandemic, and will inevitably affect IP discussions in countries around the world.

#### Undermines R&D and innovation

Mercurio 2/12 (Bryan Mercurio, [Simon F.S. Li Professor of Law at the Chinese University of Hong Kong (CUHK), having served as Associate Dean (Research) from 2010-14 and again from 2017-19. Professor Mercurio specialises in international economic law (IEL), with particular expertise in the intersection between trade law and intellectual property rights, free trade agreements, trade in services, dispute settlement and increasingly international investment law.], 2-12-2021, “WTO Waiver from Intellectual Property Protection for COVID-19 Vaccines and Treatments: A Critical Review“, No Publication, accessed: 8-8-2021, https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3789820) ajs

1. An IP waiver would undermine R&D and innovation The IP system is designed to encourage and reward creativity and innovation while benefiting society as a whole. The idea is that IPRs stimulate innovation by “enabling innovators to capture enough of the benefits of their own innovative activity to justify taking considerable risks.” 23 Therefore, while in the short term waiving IPRs may arguably accelerate the distribution of goods and services – i.e. access to COVID-19 vaccines – in the long term undermining IPRs would eliminate the incentives that spark innovation, thus hindering the discovery and development of knowledge for new products or technologies that the world needs.24

An example that illustrates the significance of IP protection is the technology of synthetic mRNA, a genetic technology behind the COVID-19 vaccines of both Pfizer and Moderna. Synthetic mRNA is a genetic technology that has long held huge promise but has so far run into biological roadblocks. The concept of tweaking specific strands in synthetic mRNA to deliver desired results was first introduced in the 1990s, but at that time while it made sense in theory it often failed in the real world as synthetic RNA was notoriously vulnerable to the body’s natural defences and the synthetic RNA was very often destroyed before reaching its target cells. In some situations, the foreign materials even elicited an immune response that poses health risks for some patients. The solution, substituting one of the nucleosides (building blocks of mRNA) for a slightly tweaked version to bypass the body’s defence, was not discovered until 2005 and did not reach commercialization stage for another 15 years.

Without the prospect of IP protection, it is simply unimaginable that scientists would devote the human and monetary resources into such R&D as there would have been no incentive to spend the time and effort on a promising but extremely challenging technology. Likewise, venture capitalists would refuse to invest billions of dollars into any research effort knowing that any other company could simply take the successful result and produce a medicine without paying for the R&D costs; in such a scenario, it would be virtually impossible to recoup the initial investment. Thus, without the promise of IP protection the technology underpinning the most advanced and promising COVID-19 vaccines would likely never have been developed. This point is of such importance that it is worth stating the obvious: IPRs have played a large role in the response to COVID-19; a response which has led to an incredible feat of humanity – the identification of the genome of a new pathogen and development of several treatments and promising vaccines within the space of a year. Without the promise of financial gain, the level of R&D into the novel coronavirus would have been greatly reduced and innovation hampered and delayed. In short, the IP system encouraged a robust response to the threat from innovator companies and worked as designed. It would be unwise (if not reckless) to place the innovation system which has delivered results in record time in jeopardy only in exchange for what is at best short-term benefits.

#### Biopharmaceutical innovation is key to prevent future pandemics and bioterror – turns case

Marjanovic and Feijao 20 [(Sonja Marjanovic, Ph.D., Judge Business School, University of Cambridge. Carolina Feijao, Ph.D. in biochemistry, University of Cambridge; M.Sc. in quantitative biology, Imperial College London; B.Sc. in biology, University of Lisbon.) "How to Best Enable Pharma Innovation Beyond the COVID-19 Crisis," RAND Corporation, 05-2020, https://www.rand.org/pubs/perspectives/PEA407-1.html] TDI

As key actors in the healthcare innovation landscape, pharmaceutical and life sciences companies have been called on to develop medicines, vaccines and diagnostics for pressing public health challenges. The COVID-19 crisis is one such challenge, but there are many others. For example, MERS, SARS, Ebola, Zika and avian and swine flu are also infectious diseases that represent public health threats. Infectious agents such as anthrax, smallpox and tularemia could present threats in a bioterrorism context.1 The general threat to public health that is posed by antimicrobial resistance is also well-recognised as an area in need of pharmaceutical innovation. Innovating in response to these challenges does not always align well with pharmaceutical industry commercial models, shareholder expectations and competition within the industry. However, the expertise, networks and infrastructure that industry has within its reach, as well as public expectations and the moral imperative, make pharmaceutical companies and the wider life sciences sector an indispensable partner in the search for solutions that save lives. This perspective argues for the need to establish more sustainable and scalable ways of incentivising pharmaceutical innovation in response to infectious disease threats to public health. It considers both past and current examples of efforts to mobilise pharmaceutical innovation in high commercial risk areas, including in the context of current efforts to respond to the COVID-19 pandemic. In global pandemic crises like COVID-19, the urgency and scale of the crisis – as well as the spotlight placed on pharmaceutical companies – mean that contributing to the search for effective medicines, vaccines or diagnostics is essential for socially responsible companies in the sector. 2 It is therefore unsurprising that we are seeing industry-wide efforts unfold at unprecedented scale and pace. Whereas there is always scope for more activity, industry is currently contributing in a variety of ways. Examples include pharmaceutical companies donating existing compounds to assess their utility in the fight against COVID19; screening existing compound libraries in-house or with partners to see if they can be repurposed; accelerating trials for potentially effective medicine or vaccine candidates; and in some cases rapidly accelerating in-house research and development to discover new treatments or vaccine agents and develop diagnostics tests.3,4 Pharmaceutical companies are collaborating with each other in some of these efforts and participating in global R&D partnerships (such as the Innovative Medicines Initiative effort to accelerate the development of potential therapies for COVID-19) and supporting national efforts to expand diagnosis and testing capacity and ensure affordable and ready access to potential solutions.3,5,6 The primary purpose of such innovation is to benefit patients and wider population health. Although there are also reputational benefits from involvement that can be realised across the industry, there are likely to be relatively few companies that are ‘commercial’ winners. Those who might gain substantial revenues will be under pressure not to be seen as profiting from the pandemic. In the United Kingdom for example, GSK has stated that it does not expect to profit from its COVID-19 related activities and that any gains will be invested in supporting research and long-term pandemic preparedness, as well as in developing products that would be affordable in the world’s poorest countries.7 Similarly, in the United States AbbVie has waived intellectual property rights for an existing combination product that is being tested for therapeutic potential against COVID-19, which would support affordability and allow for a supply of generics.8,9 Johnson & Johnson has stated that its potential vaccine – which is expected to begin trials – will be available on a not-for-profit basis during the pandemic.10 Pharma is mobilising substantial efforts to rise to the COVID-19 challenge at hand. However, we need to consider how pharmaceutical innovation for responding to emerging infectious diseases can best be enabled beyond the current crisis. Many public health threats (including those associated with other infectious diseases, bioterrorism agents and antimicrobial resistance) are urgently in need of pharmaceutical innovation, even if their impacts are not as visible to society as COVID-19 is in the immediate term. The pharmaceutical industry has responded to previous public health emergencies associated with infectious disease in recent times – for example those associated with Ebola and Zika outbreaks.11 However, it has done so to a lesser scale than for COVID-19 and with contributions from fewer companies. Similarly, levels of activity in response to the threat of antimicrobial resistance are still low.12 There are important policy questions as to whether – and how – industry could engage with such public health threats to an even greater extent under improved innovation conditions.

#### COVID incentivizes engineered bioterror- extinction

Walsh, 20 -- Axios Future correspondent [Bryan Walsh, "The coronavirus pandemic reawakens bioweapon fears," Axios, 5-14-2020, https://www.axios.com/coronavirus-pandemic-pathogen-bioweapon-45417c86-52aa-41b1-8a99-44a6e597d3a8.html, accessed 9-7-2020]

The coronavirus pandemic reawakens bioweapon fears

The immense human and economic toll of the COVID-19 pandemic only underscores the threat posed by pathogens that could be deliberately engineered and released.

Why it matters: New technology like gene editing and DNA synthesis has made the creation of more virulent pathogens easier. Yet security and regulation efforts haven't kept pace with the science.

What's happening: Despite some claims by the White House, overwhelming scientific evidence indicates that the novel coronavirus was not accidentally released from a lab or deliberately engineered, but naturally spilled over from an animal source.

That doesn't mean the threat from bioweapons isn't dire. Along with AI, engineered pandemics are widely considered the biggest existential risk facing humanity.

That's in part because a pathogen could be engineered in a lab for maximum contagiousness and virulence, well beyond what would arise through natural selection.

Case in point: a 2018 pandemic simulation put on by the Johns Hopkins Center for Health Security featured a fictional engineered virus called Clade X that combined the contagiousness of the common cold with the virulence of the real-life Nipah virus, which has a mortality rate of 40-75%. The resulting simulated global outbreak killed 150 million people.

COVID-19 isn't anywhere near that fatal, but the pandemic has shown the vulnerability of the U.S. and the world to biological threats both natural and manmade.

"Potential adversaries are of course seeing the same things we’re seeing," says Richard Pilch of the Middlebury Institute of International Studies. "Anyone looking for a radical leveling approach — whether a state actor like North Korea or a motivated terrorist organization — may be influenced by COVID-19 to consider pursuing a biological weapons capability."

Background: Bioweapons were officially banned by the Biological Weapons Convention in 1975, though North Korea is suspected of maintaining an offensive bioweapons program.

A particular concern about biowarfare and bioterror, though, is that many of the tools and methods that could be used to create a weaponized virus are largely indistinguishable from those used in the course of legitimate scientific research. This makes biotechnology "dual-use" — and that much more difficult to safely regulate without cutting off research that could be vitally important.

While earlier bioweapons fears focused on the possibility that a state or terror group could try to weaponize a known dangerous agent like smallpox — which would require somehow obtaining restricted pathogens — new technology means that someone could obtain the genetic sequence of a germ online and synthesize it in the lab.

"If you've been trained in a relevant technical discipline, that means you can make almost any potentially harmful agent that you're aware of," says Kevin Esvelt, a biologist at the MIT Media Lab and a member of the CDC's Biological Agent Containment Working Group. That would include the novel coronavirus that causes COVID-19, which was recently synthesized from its genetic sequence in a study published in Nature.

How it works: Currently, synthetic DNA is ordered through commercial suppliers. But while most suppliers screen DNA orders for the sequences of dangerous pathogens, they're not required to — and not all do, which means safety efforts are "incomplete, inaccurate, and insecure," says Esvelt.

Screening efforts that look for the genetic sequences of known pathogens also wouldn't necessarily be able to detect when synthetic DNA was being used to make something entirely novel and dangerous.

In the near future, desktop DNA synthesizers may be able to generate synthetic DNA in the lab, cutting out the need for commercial suppliers — and potential security screenings.

The democratization of biotechnology could unleash a wave of creativity and innovation, just as the democratization of personal computing did. But it also increases the number of people who could potentially make a dangerous engineered virus, whether deliberately or by accident.

## 2

### DA - US-China

#### Despite growing rivalry, US-China economic interdependence strong now. Exchange of tech know-how, collaboration science research, and massive US-China STEM pipeline improving relations – but it can easily collapse.

Hass 8/12 [Ryan Hass (Senior Fellow - Foreign Policy, Center for East Asia Policy Studies, John L. Thornton China Center The Michael H. Armacost Chair Chen-Fu and Cecilia Yen Koo Chair in Taiwan Studies Nonresident Fellow, Paul Tsai China Center, Yale Law School), 8-12-2021, "The “new normal” in US-China relations: Hardening competition and deep interdependence," Brookings, <https://www.brookings.edu/blog/order-from-chaos/2021/08/12/the-new-normal-in-us-china-relations-hardening-competition-and-deep-interdependence/> // belle]

The intensification of U.S.-China competition has captured significant attention in recent years. American attitudes toward China have become more negative during this period, as anger has built over disruptions resulting from the COVID-19 pandemic, Beijing’s trampling of Hong Kong’s autonomy, human rights violations in Xinjiang, and job losses to China.

Amidst this focus on great power competition, two broader trends in the U.S.-China relationship have commanded relatively less attention. The first has been the widening gap in America’s and China’s overall national power relative to every other country in the world. The second has been the continuing thick interdependence between the United States and China, even amidst their growing rivalry. Even on economic issues, where rhetoric and actions around decoupling command the most attention, trade and investment data continue to point stubbornly in the direction of deep interdependence. These trends will impact how competition is conducted between the U.S. and China in the coming years.

SEPARATING FROM THE PACK

As America’s unipolarity in the international system has waned, there has been renewed focus on the role of major powers in the international system, including the European Union, Russia, India, and Japan. Each of these powers has a major population and substantial economic weight or military heft, but as my Brookings colleague Bruce Jones has observed, none have all. Only the United States and China possess all these attributes.

The U.S. and China are likely to continue amassing disproportionate weight in the international system going forward. Their growing role in the global economy is fueled largely by both countries’ technology sectors. These two countries have unique traits. These include world-class research expertise, deep capital pools, data abundance, and highly competitive innovation ecosystems. Both are benefitting disproportionately from a clustering effect around technology hubs. For example, of the roughly 4,500 artificial intelligence-involved companies in the world, about half operate in the U.S. and one-third operate in China. According to a widely cited study by PricewaterhouseCoopers, the U.S. and China are set to capture 70% of the $15.7 trillion windfall that AI is expected to add to the global economy by 2030.

The United States and China have been reinvesting their economic gains to varying degrees into research and development for new and emerging technologies that will continue to propel them forward. While it is not foregone that the U.S. and China will remain at the frontier of innovation indefinitely, it also is not clear which other countries might displace them or on what timeline. Overall, China’s economy likely will cool in the coming years relative to its blistering pace of growth in recent decades, but it is not likely to collapse.

DEEP INTERDEPENDENCE

At the same time, bilateral competition between the United States and China also is intensifying. Even so, rising bilateral friction has not – at least not yet – undone the deep interdependencies that have built up between the two powers over decades.

In the economic realm, trade and investment ties remain significant, even as both countries continue to take steps to limit vulnerabilities from the other. For example, Chinese regulators have been asserting greater control over when and where Chinese companies raise capital; Beijing’s recent probe of ride-hailing app Didi Chuxing provides but the latest example. China’s top leaders have been emphasizing the need for greater technology “self-sufficiency” and have been pouring billions of dollars of state capital into this drive. Meanwhile, U.S. officials have been seeking to limit American investments from going to Chinese companies linked to the military or surveillance sectors. The Security and Exchange Commission’s scrutiny of initial public offerings for Chinese companies and its focus on ensuring Chinese companies meet American accounting standards could result in some currently listed Chinese companies being removed from U.S. exchanges. Both countries have sought to disentangle supply chains around sensitive technologies with national security, and in the American case, human rights dimensions. U.S. officials have sought to raise awareness of the risks for American firms of doing business in Hong Kong and Xinjiang.

Even so, U.S.-China trade and investment ties remain robust. In 2020, China was America’s largest goods trading partner, third largest export market, and largest source of imports. Exports to China supported an estimated 1.2 million jobs in the United States in 2019. Most U.S. companies operating in China report being committed to the China market for the long term.

U.S. investment firms have been increasing their positions in China, following a global trend. BlackRock, J.P. Morgan Chase, Goldman Sachs, and Morgan Stanley have all increased their exposure in China, matching similar efforts by UBS, Nomura Holdings, Credit Suisse, and AXA. The Rhodium Group estimates that U.S. investors held $1.1 trillion in equities issued by Chinese companies, and that there was as much as $3.3 trillion in U.S.-China two-way equity and bond holdings at the end of 2020.

One leg of the U.S.-China economic relationship that has atrophied in recent years has been China’s flow of investment into the United States. This has largely been a product of tightened capital controls in China, growing Chinese government scrutiny of its companies’ offshore investments, and enhanced U.S. screening of Chinese investments for national security concerns.

Another area of U.S.-China interdependence has been knowledge production. As U.S.-China technology expert Matt Sheehan has observed, “With the rise of Chinese talent and capital, the exchange of technological know-how between the United States and China now takes place among private businesses and between individuals.” Leading technology companies in both countries have been building research centers in the other. Alibaba, Baidu, and Tencent have all opened research centers in the United States, just as Apple, Microsoft, Tesla, and other major American technology companies rely upon engineering talent in China.

In science collaboration, The Nature Index ranks the joint research between the two countries as the world’s most academically fertile. U.S.-China scientific collaboration grew by more than 10% each year on average between 2015 and 2019. Even following the global spread of COVID-19, American and Chinese experts collaborated more during the past year than over the previous five years combined. This has led to over 100 co-authored articles in leading scientific journals and frequent joint appearances in science-focused workshops and webinars.

China also is the largest source of international students in the United States. In the 2019-20 year, there were over 370,000 Chinese students in the U.S., representing 34% of international students in colleges and universities. Up until now, many of the top Chinese students have stayed in the United States following graduation and contributed to America’s scientific, technological, and economic development. It remains to be seen whether this trend will continue.

COMPETITIVE INTERDEPENDENCE

The scale of American and Chinese interests implicated will likely induce sobriety over time in Washington and Beijing as to how the relationship is managed. The U.S. policy focus for the foreseeable future is not likely to be seeking to “defeat” China or compel the collapse of the Chinese Communist Party. Rather, the focus will be on taking steps at home and with partners abroad to strengthen America’s long-term competitiveness vis-à-vis China. At the same time, American leaders will continue to push their Chinese counterparts to improve the treatment of their citizens. Such efforts are definitional to America’s self-identity as a champion of values.

The dense webs formed by trade, financial, scientific, and academic links between the United States and China will make it difficult for one side to inflict harm on the other without hurting itself in the process. As Joe Nye has written, “America can decouple security risks like Huawei from its 5G telecommunications network, but trying to curtail all trade with China would be too costly. And even if breaking apart economic interdependence were possible, we cannot decouple the ecological interdependence that obeys the laws of biology and physics, not politics.”

President Joe Biden likely will use the challenges posed by China as a spur for his domestic resilience agenda. He is not an ideologue, though, and is unlikely to limit his own flexibility by painting the world with permanent black and white dividing lines. The Biden team knows it will be harder to realize progress on serious global challenges like climate change, pandemics, and inclusive global economic recovery without pragmatic dealings with non-democratic states.

Major near-term improvements to the U.S.-China relationship are unlikely, barring an unexpected moderation in Beijing’s behavior. At the same time, the relationship is also unlikely to tip into outright hostility, barring an unforeseen dramatic event, such as a Chinese act of aggression against an American security partner.

U.S.-China relations are going to be hard-nosed and tense. Neither side is likely to offer concessions in service of smoother relations. At the same time, the balance of interests on both sides likely will control hostile impulses, placing the relationship in a state of hardening competition that coexists alongside a mutual awareness that both sides will be impacted — for good or ill — by their capacity to address common challenges.

#### Plan hurts US-China relations – means China goes back on it’s promise to regulate IP violations and draws in U.S. crackdown.

Shape 2/19 [Steven M. Shape; registered patent attorney and electrical engineer who has represented preeminent technology companies in complex, high-stakes Intellectual Property litigation; 2-19-2021, "IP Law Looms Large Over U.S.-China Relations," No Publication, [https://www.mondaq.com/trademark/1038030/ip-law-looms-large-over-us-china-relations //](https://www.mondaq.com/trademark/1038030/ip-law-looms-large-over-us-china-relations%20//) belle]

The U.S. and China were indisputably the two largest parties in the global trade war that consumed much of the last several years. Particularly between early 2018 and late 2019, it seemed as if one could hardly go a week, if that, without hearing something about tariffs, exports, imports, steel, soybeans, then-President Donald Trump, President Xi Jinping and the like. Accusations regarding violations of Intellectual Property law were among the biggest flashpoints, and ultimately, China announced new regulations concerning IP protection in November 2019 as a conciliatory move. Nearly 14 months later, newly inaugurated President Joe Biden has yet to fully clarify his administration's stance toward China. However, it is inevitable that IP rights and their preservation will factor into negotiations between the two economic giants. A look back at the proposed reforms (and their effects) Reports from CNN at the time claimed that China's prospective IP law reforms focused on making the penalties for IP infringement more strict. It would also put the government's increasingly modernized tech infrastructure to use in the discovery and prosecution of such crimes. Beyond that, the proposal carried few specifics. Although it is unclear whether Beijing's gambit worked as the deciding factor for Washington, it certainly did not fail. The two nations agreed in principle on "Phase One" of a new trade agreement December 12, 2019, per The Washington Post, and formalized the deal about a month later. The U.S. pledged not to impose further tariffs and roll back existing import taxes in return for China's IP reforms and agreement to buy American goods. In the 14 months that followed, so much changed. COVID-19's devastating impact on human life and the global economy made it difficult to gauge the positive effects of the tariff relief or IP reform. A report by the South China Morning Post found that China did not meet its import goal for 2020, with some analysts concluding the Phase One target was unrealistic. On the IP front, a Hong Kong news provider noted that Beijing had drafted some specific guidance to protect pharmaceutical patents, trade secrets and copyrights, but it was unclear how well they were being implemented. Additionally, a January 2021 report by the U.S. Patent and Trademark Office (USPTO) found that Chinese policies which offered subsidies for certain trademark and patent applications helped motivate a glut of fraudulent and bad-faith filings in the last few years. The bigger picture of China's IP law A casual observer or someone just learning of this issue might assume that until recently, China had little or no IP laws on the books. Of course, that is not true. However, there are many factors at play complicating the matter of Chinese IP protection policies. As noted in Harvard Business Review, China is quite strict in certain aspects of IP protection: Beijing allows (and encourages) all businesses to impose non-compete agreements to help protect trade secrets and other IP assets. In addition, according to the National Law Review, two new measures were passed in 2020 specifically to combat bad-faith trademark applications, in addition to the other new guidelines being imposed by the China National Intellectual Property Administration (CNIPA) in accordance with the Phase One agreement. All that said, it would be inaccurate to describe Chinese IP law as thoroughly protective for either domestic or foreign innovators. Along with the aforementioned trademark and patent subsidies, considerable controversy stems from "forced technology transfer" policies. According to the University of Oxford's Business Law Blog, foreign companies looking to do business in China must turn over their technology to local firms or be denied the right to operate within China. This effectively means turning over the blueprints (literal or otherwise) to such technology - which is all but equivalent to surrendering the IP. It creates considerable opportunities for infringement, fraud and corruption. Also, in disputes with foreign firms, some local IP courts still markedly favor domestic organizations. Chinese government representatives often resent such accusations of bias or corruption. In their view, the deals represent friendly agreements between businesses, and courts' decisions are not politically motivated. While Oxford noted that FTT guidelines are not as pervasive now as they were a few years ago, they have yet to disappear altogether. The Biden approach: Not dissimilar, but multilateral If the new U.S. Secretary of the Treasury, Janet Yellen, is to be believed, the Biden administration will not tolerate any signs of lapses in China's IP protections. "We need to take on China's abusive, unfair and illegal practices," Yellen said to the Senate Finance Committee at her confirmation hearings. As reported by Bloomberg, she added, "[China has] been stealing intellectual property and engaging practices that give it an unfair technological advantage, including forced technology transfers. And these . are practices that we're prepared to use the full array of tools to address." Biden had expressed similar sentiments during a December interview with The New York Times. However, he also said that they would work with ally nations to "develop a coherent strategy" for addressing cases of IP infringement and other issues - a stance Yellen echoed before the Senate - instead of taking China on in a unilateral and bellicose manner. This more nuanced approach could yield greater cooperation from Beijing and help repair U.S.-China trade relations, but we will likely not know one way or the other for some time. As we saw with the trade war, conflicts between the U.S. and China can quickly escalate and have ripple effects throughout the world. It would thus be wise for all organizations doing business in China to keep themselves abreast of the country's evolving IP regulations and work with a reliable IP services provider to help establish strong protection for their intangible assets.

#### Maintaining US-China relations key to confidence building, dialogue measures, and address mutual anxieties about nukes -- that prevents nuke war.

CSIS ’13 [CSIS (CSIS is a nonprofit organization headquartered in Washington, D.C. The Center’s 220 full- time staff and large network of affiliated scholars conduct research and analysis and develop policy initiatives that look into the future and anticipate change), March 2013, " Nuclear Weapons and U.S.-China Relations a way forward," Center for Strategic and International Studies, <https://csis-website-prod.s3.amazonaws.com/s3fs-public/legacy_files/files/publication/130307_Colby_USChinaNuclear_Web.pdf> // belle]

The United States has long seen China as a central factor in its strategy in Asia. Since the 1970s, U.S. policy has sought to encourage China’s economic reforms and development and to integrate China into the existing international political and economic order. While hopeful that China will develop into a constructive stakeholder, the United States and much of the Asia-Pacific region share continuing concerns about some aspects of China’s behavior that, it is feared, could undermine regional stability and U.S. interests in the Asia-Pacific.

Unfortunately, significant sources of tension and disagreement between the United States and its allies, on the one hand, and China, on the other, remain. These sources of discord could, in the worst case, lead to conflict. Needless to say, a large-scale conventional war between the United States and China would be incredibly dangerous and likely tremendously damaging. Nuclear war between the two would be devastating for all involved. Even though a conventional war between the two nations currently seems unlikely and nuclear war even more so, the possibility that war could break out, posing dramatic dangers and damage, clearly indicates that active steps should be taken to avoid conflict and successfully manage U.S.-China nuclear dynamics.

Significance and Objectives of U.S.-China Nuclear Relations

Maintaining stability in U.S.-China nuclear relations will be critical to the interests of the United States and those of its allies and security partners in the coming years. The Working Group judges that the nuclear dynamics between the United States and China are relatively stable at this time, primarily because both sides have or will soon have a nuclear deterrent of the size and scope they determine they need, and China appears committed to a relatively restrained posture oriented around a “lean and effective” nuclear force and its no-first-use policy. Yet the Working Group is concerned that the changing conventional military balance of power in the region, the current sources of tension and possible conflict, and the expansion of the quality and quantity of China’s nuclear arsenal raise serious questions about the future stability of U.S-China nuclear relations. The recommendations contained in this report are therefore focused on enhancing nuclear stabil- ity between the United States and China, primarily by advocating a series of both bilateral and unilat- eral policy and posture adjustments that would enhance crisis stability and arms race stability, while also laying the groundwork for future bilateral and multilateral nuclear engagement.

Because the current nuclear dynamics are broadly stabilizing and should be sustained, the Working Group recommends that U.S.-China nuclear relations be oriented toward sustaining these dynamics and avoiding decisions by either side that could erode stability. We therefore recommend a robust but realistically tailored program of engagement and dialogue on nuclear issues that reinforce China’s nuclear restraint and advance U.S. interests in stability, dialogue, transparency, and prog- ress toward arms control. The Working Group recognizes, however, the limited success attempts at dialogue and cooperation have thus far yielded. The Group’s recommendations are therefore de- signed to be ambitious but realistic, and are structured in such a way that, in the event that Beijing is unwilling to engage in earnest along the lines the Group advocates, the United States would be left with a powerful strategic capability and in the strong political position of having proffered a serious, fair-minded path forward in bilateral nuclear weapons relations that China had rebuffed.

The Working Group also recommends that the United States adopt a policy of accepting China’s possession of an assured second-strike nuclear capability, and thus avoid attempting to acquire the capability to negate China’s nuclear retaliatory capabilities. This judgment relies on the fundamental determination that the United States cannot realistically hope to deny China’s second-strike capability, that a failed attempt to deny it would be costly and counterproductive, and that Beijing’s possession of a reliable retaliatory capability promotes stability rather than detracts from it. In addition, this approach could reinforce China’s nuclear restraint. The Working Group is, however, divided on whether the United States should publicly and formally announce this acceptance.

The Working Group believes that some of the concepts associated with the idea of “strategic stability” provide an appropriate framework for U.S.-China engagement on nuclear weapons is- sues, although the specific meaning of the term is the subject of a long-running debate that has never been definitively settled. In order to gain the benefits of strategic stability, the Working Group believes that nuclear relations between the United States and China should emphasize two complementary approaches: crisis stability and arms race stability.

Stability can emerge between the United States and China if each fields forces that are capable of surviving a first strike and if each is able to credibly demonstrate to the other side that its cur- rent and future capabilities are not capable of denying the other side a viable strategic deterrent. As a result, fear of preemption and the need to launch weapons early become irrelevant, either as irri- tants in crisis or as dangers in conflict. In this way, the benefits of deterrence can be retained, while minimizing the chances of nuclear escalation and avoiding a competition in the development of offensive and defensive strategic arms that would intensify uncertainties for both sides.

Both sides could derive value from cooperation on nuclear weapons issues grounded in the stability concept. The United States worries about the composition of China’s nuclear force, China’s views on escalation and plans for nuclear use, and the future trajectory of China’s strategic posture. China, meanwhile, worries about the ability of the United States to deny it a second-strike capa- bility; the scope and sophistication of future U.S. nuclear, conventional prompt global strike, and missile defense programs; and U.S. unwillingness to acknowledge a condition of mutual vulner- ability between the two nations. A stability-grounded model could help address these anxiet- ies—on the U.S. side by providing greater insight into China’s current and future force structure and deeper insight into China’s ways of thinking about nuclear strategy, and on the Chinese side by providing similar insight into U.S. developments and a greater degree of assurance about U.S. acknowledgment of the survivability of the Chinese force. Concurrently, such an approach would have the added benefit of building confidence on both sides, thereby enhancing strategic trust more broadly. Finally, such a model could also provide a satisfactory way in which both nations could see something approximating their current force size, posture, and doctrine as satisfactory and compatible with stability.

#### US-China war causes extinction.

Wittner, PhD, 12

(Lawrence, History from Columbia, Professor Emeritus of History at SUNY Albany, <https://www.huffpost.com/entry/nuclear-war-china_b_1116556>) BW

Of course, the bottom line for those Americans convinced that nuclear weapons safeguard them from a Chinese nuclear attack might be that the U.S. nuclear arsenal is far greater than its Chinese counterpart. Today, it is estimated that the U.S. government possesses over 5,000 nuclear warheads, while the Chinese government has a total inventory of roughly 300. Moreover, only about 40 of these Chinese nuclear weapons can reach the United States. Surely the United States would “win” any nuclear war with China. But what would that “victory” entail? An attack with these Chinese nuclear weapons would immediately slaughter at least 10 million Americans in a great storm of blast and fire, while leaving many more dying horribly of sickness and radiation poisoning. The Chinese death toll in a nuclear war would be far higher. Both nations would be reduced to smoldering, radioactive wastelands. Also, radioactive debris sent aloft by the nuclear explosions would blot out the sun and bring on a “nuclear winter” around the globe — destroying agriculture, creating worldwide famine, and generating chaos and destruction. Moreover, in another decade the extent of this catastrophe would be far worse. The Chinese government is currently expanding its nuclear arsenal, and by the year 2020 it is expected to more than double its number of nuclear weapons that can hit the United States. The U.S. government, in turn, has plans to spend hundreds of billions of dollars “modernizing” its nuclear weapons and nuclear production facilities over the next decade. To avert the enormous disaster of a U.S.-China nuclear war, there are two obvious actions that can be taken. The first is to get rid of nuclear weapons, as the nuclear powers have agreed to do but thus far have resisted doing. The second, conducted while the nuclear disarmament process is occurring, is to improve U.S.-China relations. If the American and Chinese people are interested in ensuring their survival and that of the world, they should be working to encourage these policies.

## 3

### CP Compulsory Licensing

#### CP: Member nations of the WTO should declare the COVID-19 pandemic a national emergency on the basis public health crisis and issue compulsory licenses for relevant medicines. Member nations should offer regulatory and legal assistance to nations filing a compulsory license.

#### The United States federal government should:

#### - substantially increase production and global distribution of the COVID-19 Vaccine

#### - cooperate with allies to achieve increased production and global distribution of the COVID-19 Vaccine.

The national emergency declaration matters because normally invocation of compulsory licenses requires an attempt to negotiate a voluntary license first. Invoking national emergency bypasses this

* The last plank is because a big criticism is that these countries (e.g. Rwanda) haven’t used CL as much because they lack the experience to invoke it.
* If countries can’t manufacture the medicine, they can import it from others who have CL. Means multiple actors is key

#### It’s goldilocks - protects patents while allowing urgent access – the perm or the aff shatters IP protections while the CP strikes an accepted balance

**Bacchus 2020** (James, Adjunct Fellow, Cato Institute, former U.S. Representative (D-FL), and former Chairman, World Trade Organization’s Appellate Body. “An Unnecessary Proposal: A WTO Waiver of Intellectual Property Rights for COVID-19 Vaccines,” *Cato* <https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#balancing-ip-rights-access-medicines-not-new-wto> December 16, 2020)DR 21

As Jennifer Hillman of the Council on Foreign Relations observed, ordinarily the “inherent tension between the protection of intellectual property and the need to make and distribute affordable medicines” is “resolved through licensing, which allows a patent holder to permit others to make or trade the protected product—usually at a price and with some supervision from the patent holder to ensure control.”[7](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref7) But, in public health emergencies, it may be impossible to obtain a license. In such cases, “compulsory licenses” can be issued to local manufacturers, authorizing them to make patented products or use patented processes even though they do not have the permission of the patent holders.[8](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref8)

After years of debate, WTO members clarified in the Doha Ministerial Declaration in November 2001 that each WTO member “has the right to grant compulsory licenses and the freedom to determine the grounds upon which such licenses are granted.”[9](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref9) In August 2003, WTO members followed up on the 2001 declaration by adopting a waiver that allows poorer countries that do not have the capacity to make pharmaceutical products—and thus cannot benefit from compulsory licensing—to import cheaper generic drugs from countries where those drugs are protected by patent.[10](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref10) In such a case, both the importing and exporting countries are excused from what would otherwise be their obligations under the TRIPS Agreement. This waiver was transformed into an amendment in the WTO IP rules in 2017.[11](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref11)

Compulsory licensing of medicines is not popular with private drug manufacturers because it is a derogation from the customary workings of market‐​based capitalism. However, as these actions by WTO members in 2001, 2003, and 2017 illustrate, compulsory licensing is not a derogation from the balance **struck by the members of the WTO** between protecting IP rights and ensuring access to essential medicines. Rather, it is a crucial part of that balance. The balance struck in the WTO treaty includes the option of compulsory licensing during health emergencies.

Does a Novel Virus Present Novel Issues?

Now comes the COVID-19 crisis. In the debate over the proposed COVID-19 waiver, mostly we have heard the usual arguments, all of them reminiscent of the HIV/AIDS debate. The pharmaceutical companies in the global vaccine chase have been quick to express their opposition to the proposed waiver of IP rights for the pandemic’s duration. They have warned that allowing their COVID-19 vaccines to be copied without their permission through recourse to compulsory licensing “would undermine innovation and raise the risk of unsafe viruses.”[12](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref12)

The reaction of most nongovernmental health organizations and other global advocacy groups to these arguments is summed up in the Access Campaign’s response: “Since the start of the pandemic, pharmaceutical companies have continued with their ‘business‐​as‐​usual’ approaches either by maintaining rigid control over their proprietary IP rights or by pursuing secretive and monopolistic commercial deals and excluding countries affected by COVID-19.”[13](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref13)

What we have not heard in the waiver debate is any clear explanation from waiver advocates of why they believe that the right to compulsory licensing that they already possess will prove insufficient to ensuring access to COVID-19 vaccines.

In requesting a broad waiver of IP rights to COVID-19 vaccines, India and South Africa maintained that “many countries especially developing countries may face institutional and legal difficulties when using flexibilities available” under existing WTO rules. They also noted that a “particular concern for countries with insufficient or no manufacturing capacity” is that the 2017 amendment that permits countries that produce generic medicines under compulsory license to export all of those medicines to least‐​developed countries that lack their own manufacturing capabilities will lead to a “cumbersome and lengthy process.”[14](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref14)

India and South Africa did not offer any further explanation or any evidence to support these assertions. In an effort at an explanation, two Canadian university professors contended, “The TRIPS flexibilities are important policies but they are not perfect. Rules allowing compulsory licensing apply only on a case‐​by‐​case and product‐​by‐​product basis. This slows down the ability of countries to scale up production of needed COVID-19 products.”[15](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref15) But this is advocacy, not evidence. At the time, this point was purely prospective; it was a prejudgment before any COVID-19 vaccine had been given final approval or reached the market.

Before such a sweeping waiver of IP rights is taken up, it should first be demonstrated that the option of compulsory licensing and other flexibilities under the current trade rules will not suffice. At this point, the developed countries that have opposed the waiver are correct. There is no evidence of the need for such a waiver. Action by the WTO should be contemplated only if, and when, the current flexibilities in WTO rules prove to be inadequate. Should that happen, any such action should be no broader than necessary to address the global medical need.

At the heart of this emerging trade debate is a belief by many people worldwide that all medicines should be “global public goods.” There is little room in such a belief for consideration of any rights to IP. As one group of United Nations human rights experts expressed: “There is no room for … profitability in decision‐​making about access to vaccines, essential tests and treatments, and all other medical goods, services and supplies that are at the heart of the right to the highest attainable standard of health for all.”[16](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref16)

This view is myopic. **Subordinating IP rights temporarily** to pressing public needs during a pandemic or other global health emergency is one thing. Eliminating any consideration of “profitability” in all policymaking relating to “access to vaccines, essential tests and treatments, and all other medical goods, services and supplies” is quite another.[17](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref17) To be sure, there is a superficial moral appeal in such a view. But does this moral appeal hold up if such a “human rights” approach does not result in meeting those urgent public needs?

With the belief that medicines should be “public goods,” there is literally no support in some quarters for the application of the WTO TRIPS Agreement to IP rights in medicines. Any protection of the IP rights in such goods is viewed as a violation of human rights and of the overall public interest. This view, though, does not reflect the practical reality of a world in which many medicines would simply not exist if it were not for the existence of IP rights and the protections they are afforded.

Technically, IP rights are exceptions to free trade. A long‐​standing general discussion in the WTO has been about when these exceptions to free trade should be allowed and how far they should be extended. The continuing debate over IP rights in medicines is only the most emotional part of this overall conversation. Because developed countries have, historically, been the principal sources of IP rights, this lengthy WTO dispute has largely been between developed countries trying to uphold IP rights and developing countries trying to limit them. The debate over the discovery and the distribution of vaccines for COVID-19 is but the latest global occasion for this ongoing discussion.

The primary justification for granting and protecting IP rights is that they are incentives for innovation, which is the main source for long‐​term economic growth and enhancements in the quality of human life. IP rights spark innovation by “enabling innovators to capture enough of the benefits of their own innovative activity to justify taking considerable risks.”[18](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref18) The knowledge from innovations inspired by IP rights spills over to inspire other innovations. The protection of IP rights promotes the diffusion, domestically and internationally, of innovative technologies and new know‐​how. Historically, the principal factors of production have been land, labor, and capital. In the new pandemic world, perhaps an even more vital factor is the creation of knowledge, which adds enormously to “the wealth of nations.” Digital and other economic growth **in the 21st century is increasingly** ideas‐​based and knowledge intensive. Without IP rights as incentives, there would be less new knowledge and thus less innovation.

In the short term, undermining private IP rights may accelerate distribution of goods and services—where the novel knowledge that went into making them already exists. But in the long term, undermining private IP rights would eliminate the incentives that inspire innovation, thus **preventing** the discovery and development of knowledge for new goods and services that the world needs. This widespread dismissal of the link between private IP rights and innovation is perhaps best reflected in the fact that although the United Nations Sustainable Development Goals for 2030 aspire to “foster innovation,” they make no mention of IP rights.[19](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref19)

As Stephen Ezell and Nigel Cory of the Information Technology and Innovation Foundation wrote, “A fundamental fault line in the debate over intellectual property pertains to the need to achieve a reasoned balance between access and exclusive rights.”[20](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref20) This fault line is much on display in the WTO rules on IP rights. These rules **recognize that “intellectual property rights are private rights”** and that rules and disciplines are necessary for “the provision of effective and appropriate means for the enforcement of trade‐​related intellectual property rights.”[21](https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#_ednref21) Yet, where social and economic welfare is at stake, WTO members have sought to strike a balance in these rules between upholding IP rights and fulfilling immediate domestic needs.

#### Compulsory licensing solves access and spills over to distribution of green tech - empirics and past precedent

* AT: Can’t manufacture—can import from foreign firms
* AT: Prices still high—MNC’s lower price to avoid CL

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\*\*\*Note: EST= Environmentally Sound Technologies\*\*\*

Even though there are limits to their effectiveness, compulsory licences are considered a valuable tool for governments to facilitate access to medicines through the prevention of patent abuses as well as the “encouragement of domestic capacities for manufacturing pharmaceuticals”. 289 According to the UNDP Human Development Report (2001), after the adoption of the TRIPS Agreement, compulsory licences were initially mainly used in Canada, Japan, the UK and the United States for products such as pharmaceuticals – particularly as a remedy to address anti-competitive practices and prevent higher prices – while no compulsory licence was issued then in developing countries largely due to pressure from Europe and the United States and the fear of long and expensive litigation against the pharmaceutical industry.290 As demonstrated in Section 5.4.1.2, in order to address developing countries’ concern, the 2001 Doha Declaration explicitly reaffirmed the right of countries to issue compulsory licences where necessary, in the interests of public health.

In order to enable countries with insufficient manufacturing capacity in the pharmaceutical sector to benefit from the compulsory licensing system, the WTO General Council adopted the Decision of 30 August 2003 on the implementation of paragraph 6 of the Doha Declaration on the TRIPS Agreement and public health (the so-called paragraph 6 system).291 This decision essentially expanded the TRIPS flexibilities, involving two waivers: (1) with respect to the exporting country, a “waiver” of obligations to use the authorised compulsory licence predominantly for the supply of the domestic market under Article 31(f); and (2) with regard to the importing country, a waiver of the adequate remuneration requirement under Article 31(h) when remuneration is paid in the exporting Member. “Where a compulsory licence is granted by an exporting Member under the system set out in this Decision, adequate remuneration pursuant to Article 31(h) of the TRIPS Agreement shall be paid in that Member taking into account the economic value to the importing Member of the use that has been authorised in the exporting Member”. 292

In 2005, WTO Members agreed to make the waivers permanent by amending the TRIPS Agreement.293 With the approval of two-thirds of the WTO Members, the amendment entered into force on 23 January 2017. As the very first legal amendment to a WTO multilateral agreement, it was said to have shown that “[M]embers are determined to ensure the WTO’s trading system contributes to humanitarian and development goals”. 294 Likewise, such amendment could be extended to address other global concerns such as climate change in accordance with the WTO’s sustainable development objective and Articles 7 and 8 of the TRIPS Agreement.

In effect, the compulsory licensing system established within the WTO framework is not a panacea, but rather a legal guarantee of rights and ability to make effective use of compulsory licences. Since the adoption of the Doha Declaration, a number of developing countries (e.g., Thailand, Brazil, Ecuador, India and Indonesia) have issued compulsory licences to lower the price of patented medicines such as HIV/AIDS drugs.295 Additionally, in 2007, Rwanda became the first country without sufficient manufacturing capacities to use the WTO “paragraph 6 system” to import Apo-TriAvir from Apotex, a Canadian firm.296 Commentators note that since the Doha Declaration was adopted in 2001, the threat of compulsory licenceshas motivated multinational companies to “voluntarily make proactive efforts to realistically make their drugs accessible**”** either through dramatically lowering the price or by offering voluntary licences on favourable terms.297 Meanwhile, many countries have successfully used the threat of compulsory licences as leverage in drug price negotiations with pharmaceutical companies.298

The positive role of compulsory licences and the threat thereof in promoting access to medicines could inspire WTO Members to use the compulsory licensing instrument to pursue other public policy objectives such as mitigating climate change. Despite being public-health-specific, the Doha Declaration and the TRIPS Amendment set a welcome precedent in guaranteeing Members’ right and ability to make effective use of the compulsory licensing for the protection of other general public interests such as environmental protection. Bearing this in mind, the following sections examine the feasibility, opportunities and challenges of compulsory licences for EST transfer.

6.4.4.2 Compulsory Licences for Transfer of ESTs: Feasibilities and Opportunities

The TRIPS Agreement does not contain any explicit limitations on the grounds upon which compulsory licences may be granted.299 This is reaffirmed by Paragraph 5(b) of the Doha Declaration, emphasising that each Member has the right to grant compulsory licences upon the grounds it determines. As discussed in Section 1.1, climate change is “a common concern of mankind” and tackling climate change is clearly in the public interest. Thus, WTO Members have the power to grant compulsory licences for patented ESTs on the ground that such ESTs are needed to achieve climate change mitigation. This view has been endorsed by many commentators, considering that climate change mitigation could provide a valid ground for compulsory licence of ESTs.300

As previously demonstrated, read in accordance with the WTO’s sustainable development objective and Articles 7 and 8 of the TRIPS Agreement, Article 31 provides regulatory space for Members to use compulsory licences to facilitate the transfer of ESTs. Members’ right and discretion to use compulsory licences in the context of climate change is further supported by developed countries’ commitments to transfer ESTs under Article 4.5 of the UNFCCC which serve as a contextual element for the interpretation Article 31. Specially speaking, WTO Members not only enjoy great discretion to grant compulsory licences for EST patents on different grounds but also have certain flexibilities in applying the conditions for the granting of compulsory licences.

As to the grounds for compulsory licensing, first, Members may issue compulsory licences for the lack of local working of certain EST patents. To the extent that local production of certain patented ESTs is needed to mitigate climate change, such local working requirements constitute a bona fide distinction rather than discrimination as to whether products are imported or locally produced in Article 27.1. As demonstrated in Section 6.4.2.2, some countries, such as Brazil, permit compulsory licences in cases where the invention is not (sufficiently) exploited locally.301

Second, Members may issue compulsory licences to address IP-related abuses and anti-competitive practices in the process of the transfer of ESTs. As pointed out by Reichman et al. (2008), compulsory licences for anticompetitive practices afford countries another set of options to facilitate the access to patented ESTs, “especially when foreign firms refuse to deal with local firms or refuse to make technologies available at prices that local firms can afford”. 302 In this case, compulsory licensing may proceed without prior negotiation efforts and the licensee may exploit the patent at issue regardless of the location of the predominant market.303

Third, WTO Members may consider climate change as a “national emergency or other circumstances of extreme urgency” within the meaning of Article 31(b), thereby permitting compulsory licensing for certain EST-related patents. The TRIPS Agreement neither defines the concept of “national emergency” or “other circumstances of extreme urgency” nor does it provide guidance for what is meant by these concepts. Again the Doha Declaration affirms that “[e]ach member has the right to determine what constitutes a national emergency or other circumstances of extreme urgency”, but added that “public health crises, including those relating to HIV/AIDS, tuberculosis, malaria and other epidemics, can represent a national emergency or other circumstances of extreme urgency”. 304 According to Correa (2002), the reference to “HIV/AIDS, tuberculosis, malaria and other epidemics” suggests that an “emergency” may not be restricted to a short-term problem, but can also be a long-lasting situation, and such recognition implies that “specific measures to deal with an emergency may be adopted and maintained as long as the underlying situation persists, without temporal constraints”. 305 The Rio+ 20 Outcome Document (A/RES/66/288) reaffirms that “climate change is one of the greatest challenges of our time” and stresses that combating climate change represents “an immediate and urgent global priority”. 306 The preamble of the 2015 Paris Agreement explicitly recognises that climate change poses an “urgent threat”. 307 Accordingly, WTO Members, in particular, those countries suffering the most from climate change, may well argue that climate change constitutes “a national emergency” or another circumstance of “extreme urgency” within the meaning of Article 31(b) of the TRIPS Agreement, therefore permitting compulsory licences for certain EST-related patents. No prior negotiations are needed for such licences, which would therefore promote rapid access to critical ESTs by the countries concerned.

Turning to the conditions for the granting of compulsory licences, although these conditions are strict, interpreting these clauses in their context in accordance with the WTO’s sustainable development objective and Articles 7 and 8 of the TRIPS Agreement would provide Members some policy space to facilitate the transfer of patented ESTs. As discussed in Section 6.4.3.1.1, the procedural requirement that a licence must be considered “on its individual merits” (Article 31(a)) does not prevent WTO Members from setting parameters for the granting of compulsory licences regarding certain categories of technologies that are needed to mitigate climate change. As discussed in Section 6.4.3.2.1, Article 31(h) embodies substantial flexibilities in determining the level of, and the basis upon which, adequate remuneration is paid and, in particular, the need for the transfer of ESTs could be an important consideration in establishing the level of compensation.

In general, compulsory licensing is seen as a means of ensuring easy access to, and wide dissemination of, ESTs throughout the world.308 The use of compulsory licences and the threat thereof to ensure the availability and affordability of essential medicines have provided a powerful precedent supporting that such licences could be used to facilitate access to essential ESTs.309 As is the case with essential medicines described above, not only compulsory licences are indispensable when an EST-patent holder refuses to transfer the essential technologies at all, but often the mere threat to impose a compulsory licence may compel the EST-patent holder to engage in voluntary licensing or lower the price of the patented ESTs.310 As mentioned in Section 6.4.2.1, using compulsory licences to facilitate access to ESTs have been recommended by Agenda 21 and incorporated into the US Clear Air Act. Therefore, countries, at least those with sufficient technological capabilities, can facilitate access to patented ESTs by using or threatening to use compulsory licences in accordance with the relevant rules set forth in the TRIPS Agreement.311

#### Diffusion occurs and solves climate. The issue is inexperience and lack of political will

* At: WTO backlash- CL for climate now, just from U.S.
* AT: Royalties- cheaper with them than making own
* AT: Can’t manufacture- CL lets them buy from foreign firms- Article 31

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Much of the discussion on technology transfer has been concerned with the issue of climate change mitigation. However, for developing countries, technology would probably be more important for adaptation. They will need technology in agriculture so that **crops can withstand the impacts of climate change**. They will need technology to deal with water stress, greater occurrence of existing diseases, and the arrival of new diseases.

The Intergovernmental Panel on Climate Change (IPCC) has listed the various hurdles to technology transfer, including high capital costs, limited access to capital, poor access to information, institutional and administrative difficulties in developing technology transfer contracts, lack of infrastructure to absorb riskier technologies, absence of economic incentives, and IPRs (Metz et al. 2000). Sale or licensing of intellectual property is an important component of transfer of technology in the international context.

Technologies protected by IPRs need to be licensed. The nature of the IPR regime is an issue in so far as it determines the terms of licensing. Therefore, there is a great likelihood of production and usage costs increasing because of payments made to obtain licences. In some case, the owner may just refuse to grant a licence altogether as such technologies are used as barriers to entry (Aoki and Small 2004). DuPont, for example, refused to grant licence for the production of chlorofluorocarbon substitutes to Korean and Indian firms that sought **to meet the phase-out requirements for ozone-depleting substances** (South Centre 2001). Such refusal can further dampen the diffusion of technology. Often, production of relevant goods that embody such technology is cheaper in developing countries even after payments of royalties. Given this context, it has been suggested that the issuance of compulsory licences can be a tool for faster diffusion of climate-friendly technologies (Barton 2007; Khor 2008).

4.3 Compulsory licensing. Compulsory licence, a statutorily created licence that allows others to pay a royalty and use an invention without the patentee’s permission, is an important feature of IPR law. It also includes the government authorizing itself to use an otherwise protected intellectual property without having to obtain the permission or authorization of a patent holder in cases of national emergency or use towards a public good. The issue of compulsory licensing becomes a case for consideration when a patent holder is not willing to share the technology with others voluntarily. Compulsory licensing introduces competition in the markets and hence makes the relevant goods and services cheaper.

The term compulsory licence does not figure as such in the WTO’s Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). However, it can be read into the provision of the Agreement on other use (of the patented subject matter) without authorization of the right holder. Exceptions to the rights of patent holders11 and principles on measures for preventing the abuse of IPRs by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology also provide reasonable flexibility for resorting to the provision of compulsory licensing.12

In the US, 28 USC 1498 is the seminal legal provision relating to the government use of patents and copyrights. The process provided under this provision empowers the US government to use and authorize the use of a patent without any requirement to seek a licence or negotiate the use. It also entitles the patent right owner to compensation by fi ling a suit in the US Court of Federal Claims for recovery of his “reasonable and entire compensation”.

The US has a long history of compulsory licensing, which has been mostly used as an antitrust remedy in cases of patent abuses. In Besser Manufacturing, the court quoted compulsory licensing as “a well-recognized remedy where patent abuses are proved in antitrust actions and it is required for effective relief.”5 Similarly in the Glaxo Group case, the court stated that “mandatory selling on specifi ed terms and compulsory patent licensing at reasonable charges are recognized antitrust remedies.”6 The General Electric case is an interesting case in which the court required General Electric to issue “free” licences for light bulb patents to its competitors. 7 In the Microsoft Corporation case the district court endorsed compulsory licensing as “a remedy closely connected with the theory of liability in this case …. To ensure that no practices likely to result in monopolization….provisions plainly fall within public interest.”

There also exists a host of specific environmental and health legislation in the US that provide for the targeted licensing of specific technological applications to meet public health needs and specific environmental objectives like air pollution control. 42 USC Sec 7608 provides for mandatory licensing of air pollution prevention inventions under Title 42 (Public Health and Welfare) under the Clean Air Act. Mandatory patent licences have also been granted under Section 308 of the Clean Air Act.9 The defence sector has been one of the major consumers of the compulsory licenses issues by the US government.

In Europe, although compulsory licensing has not been as frequent as in the US, the IMS Health case is considered to be a landmark case in this regard. In this case, the European Court of Justice laid down certain conditions under which a compulsory licence can be granted.10 In the Regulation (EC) No 816/2006 of the European Parliament and of the Council of 17 May 2006 on compulsory licensing of patents relating to the manufacture of pharmaceutical products for export to countries with public health problems, prior negotiations in circumstances of national emergency and public noncommercial usage have been waived. In such cases, payment for a patent licence has been fixed at 4 percent of the remuneration given by the importing country.

Some South Asian countries too have legal provisions for compulsory licensing. Sections 84 and 92 of the Indian Patent Act 1970 (along with revisions) relate to the issuance of compulsory licences. The Act states that after three years from the date of sealing of a patent, an interested party may apply to the Controller for the grant of a compulsory license alleging that the reasonable requirements of the public with respect to the invention have not been satisfi ed or that the invention is not available at a reasonable price (CUTS 2006). Pakistan also has similar provisions. Under Sri Lanka’s Intellectual Property Act No 36 of 2003, compulsory licences can be issued only in extreme cases. This could be because Sri Lanka signed a bilateral agreement with the US in 1991 limiting the grounds for the use by Sri Lanka of compulsory licensing of patents.

Article 31 (c) of the TRIPS Agreement also provides that a country can use such a measure “to remedy a practice determined after judicial or administrative process to be anti-competitive”. Hence, countries can invoke their competition law where “abuse of dominance” is included as one of the anti-competitive practices and the source of dominance is an IPR. However, the provision also requires that the possibilities of obtaining a voluntary licence must be exhausted before a compulsory licence is sought. Similarly, Article 40 of the TRIPS Agreement dealing with control of anti-competitive practices in contractual licences provides that: “Nothing in this Agreement shall prevent Members from specifying in their legislation licensing practices or conditions that may in particular cases constitute an abuse of intellectual property rights having an adverse effect on competition in the relevant market.” Hence, refusal to give a licence along with under-servicing of the market can also be interpreted as an anti-competitive practice. The right of WTO members to make use of compulsory licences in the interest of public health has been explicitly recognized in the Doha Declaration on Public health and the August 2003 Decision by WTO members. Pursuant to these, the General Council of the WTO amended the TRIPS Agreement on 6 December 2005.13

A compulsory licence can be granted in cases such as meeting government requirements, abuse of patent rights, national emergency, public non-commercial use and technical advance of considerable economic significance over the existing patent. Accordingly, Thailand issued a compulsory licence in late 2006 for five years on Efavirenz, an AIDS drug patented by Merck. Brazil followed suit in 2007.

The TRIPS Agreement recognizes countries’ freedom to determine what constitutes national emergency in their context. While the flexibility rests with countries to determine when and in which cases compulsory licences can be used, in the absence of any specifications or directives, there is bound to be some confusion or conflict. To make use of the provisions for compulsory licensing for diffusion of climate-friendly technologies, first and foremost, climate change mitigation has to be treated as a public good. It is also important to lay down detailed guidelines and specifications to help a country identify a technology that can be eligible for the issuing of a compulsory licence. Similarly, eligibility criteria for the countries may be specified.

Under the World Intellectual Property Organization’s Development Agenda, some developing countries have talked about the use of compulsory licensing to promote greater access to technologies. However, developed countries, particularly, the US and the EU, have argued that compulsory licensing and its effects thereof would also send a strong signal to potential and current investors that their investment is not safe and welcome (WIPO 2005). Interestingly, it is not developing countries who invented the concept of compulsory licensing. As discussed above, it has been used on several occasions in the US and the EU. In particular, the US has been quite an enthusiastic user of it. However, the US and the EU feel that developing countries may not be “responsible” enough in its use.

The IPR issue is included in many regional and bilateral trade agreements—mostly of the North-North and North-South variety—as well. However, by and large, such agreements adopt higher standards of IPR protection, meaning that they will make compulsory licensing more difficult. The IPR-related provisions in the North American Free Trade Agreement (NAFTA) are similar to those of the TRIPS Agreement, which allows the use of compulsory licences without specifying the grounds for issuing them.

However, NAFTA also provides for detailed provisions on the rights of patent owners in the case of compulsory licensing, and since its coming into force, there has been a significant reduction of compulsory licences both in the US and Canada (Kommerskollegium 2008). Some bilateral trade agreements signed by the US have even more restrictive provisions. For example, four such bilateral agreements (US-Vietnam, US-Jordan, US-Singapore and US-Australia) limit the use of compulsory licensing to emergency situations, anti-trust remedies, and cases of public non-commercial use (Fink and Reichenmiller 2005).

The real effectiveness of compulsory licensing to promote transfer of technology, however, will depend on the market conditions of the relevant products and technologies. It is important that there are capable and willing fi rms to receive a compulsory licence. This will require a sufficient number of firms producing the same or similar products. Markets for climate-friendly products and technologies are unlikely to meet such conditions as they are highly concentrated. The concentration is even higher in particular segments of the industry (Sawhney 2006). If a firm remains a virtual monopoly for a sufficiently long period of time, then it becomes extremely difficult for any other firm to enter that industry. If there is no firm with adequate capability to receive a compulsory licence of some technology and use it, a mere legal provision for compulsory licensing is of little use.

The US is the world’s largest producer of environmental technologies and occupies about 33 percent share of the international market. The other major suppliers are the EU (particularly Germany) and Japan. The Office of Environmental Industries of the US proudly claims that developing nations simply do not have the technologies (Nanda 2008a). It is very likely that the situation would be quite similar in the case of technologies that relate to climate change mitigation.

In a recent study based on patenting between 1978 and 2003, it was found that innovation in climate change technologies is highly concentrated in three countries, namely Japan, Germany and the US, which accounts for two thirds of total climate innovations in 13 technologies (Dechezleprêtre et al. 2008). If developing countries need to make use of compulsory licensing in order to make these technologies better accessible, they will need domestic companies with manufacturing capabilities. However, they are unlikely to have such capabilities in most of these technologies.

Developing countries will find it difficult to make compulsory licences work in climate-friendly products and technologies, as most of them do not have much production capabilities. Indeed, production capacities are limited in developing countries also because they do not have access to the technologies. These products are very different from pharmaceutical products. For example, Bangladesh, an LDC, has capabilities to produce pharmaceutical products, but a relatively advanced developing country like India does not have much capability in climate change mitigation technologies.

#### Balancing patent protection with rapid transfer of green tech is the only way to solve climate change

**Probst et al. 2021** (Benedict Probst, University of Cambridge. PhD on economics of clean energy transition from the University of Cambridge. Simon Touboul, MINES Paris Tech, PSL University, Matthieu Glachant MINES ParisTech and Antoine Dechezleprête, OECD. “Global Trends in the Innovation and Diffusion of Climate Change Mitigation Technologies,” pre-print under review in *Nature Portfolio.* <https://www.researchsquare.com/article/rs-266803/v1> Last updated Feb. 2021)DR 21

After almost two decades (1995-2013) of increasing patenting rates in low-carbon technologies, our analysis shows an overall decline in CCMT-patenting trends since 2013. Low fossil-fuel and carbon prices, as well as lower private and public funding for low-carbon technologies after the financial crisis, have likely contributed to the decline. This decline is worrisome, particularly because a range of studies shows that the availability of low-carbon technologies is critical for mitigating dangerous climate change 33. While there is an overall decline in patenting, our analysis also shows that the least affected is the ICT-sector.

Over the last decade, the concentration of CCMT innovation in few (mostly high-income) countries has remained largely stable. This concentration indicates that existing climate policies and market forces have not led to a more diverse set of CCMT-inventing countries. Nonetheless, both China (ranked 5th in global CCMT inventions) and Taiwan (7th) have caught up substantially over the last decade. China is also the major recipient of CCMT from high-income countries, receiving 72% of transferred technologies from high to middle-income countries from 2013-2017. Yet, overall emerging economies remain less specialised in CCMT technologies than the global average. The lack of specialisation of emerging economies in CCMT also points towards a more fundamental challenge: many emerging economies may be hesitant to fully engage in a low-carbon transition if there are few jobs in the low-carbon sector of the economy to which existing jobs in high-carbon sectors can be shifted (e.g., coal mining).

Our findings indicate two important lessons: First, there is a dangerous downward trend in low-carbon inventions. It is particularly worrisome that the Paris Agreement does not appear to have reversed the downward trend in low-carbon patenting. Second, our findings underscore the need for more transfers to developing and emerging economies where most CO2-emissions increases are set to occur. While global transfers do not merely occur between industrialised countries, most of the transfers from high-income to middle-income countries go to China. Hence, transferring more technologies to other emerging economies – such as South Africa, Brazil, and Russia – is critical to mitigating climate change.

## Case

#### Plan text is solve all vaccines, but adv is about covid only, can’t solve

### Solvency

#### Rn the WTO's appellate body, which is key to the dispute settlement process, cant function cuz the US is refusing to appoint a judge – proves aff can’t solve and it’s gg for the WTO advantage

Ashurst 7/16 Ashurst [A progressive global law firm] Proposed EU Regulation on CBAM, July 16 2021, <https://www.ashurst.com/en/news-and-insights/legal-updates/proposed-eu-regulation-of-cbam-published/> belle

Next steps for the Commission's proposal

Following publication of the detailed proposal for the CBAM, it will need to go through the ordinary legislative procedure, which involves being reviewed and modified by the European Parliament and the Council. This process will provide Member States with the opportunity to introduce significant changes.

Future developments

While only a proposal, the draft CBAM regulation also contains a reporting and review mechanism. Here, the draft CBAM regulation obliges the Commission to report before the end of the transitional period on the application of the CBAM, with a view to extending the scope of CBAM to indirect emissions and goods other than those listed in Annex I.

How might the proposal be challenged?

The CBAM is controversial outside the EU. Commentators have already started to map out potential challenges to it. In principle, these challenges follow two distinct routes:

that the CBAM breaches international obligations; and/or

that the CBAM breaches EU domestic law.

The main international route would be a WTO challenge by another WTO member government. As the WTO dispute settlement process is a government-to-government process, business would need to either lobby a government to bring a WTO Dispute Settlement Understanding (DSU) case, or, in certain jurisdictions, use formal processes (e.g. section 301 of the U.S. Trade Act of 1974) to stimulate a government to bring a case that it would not otherwise bring.

The obvious candidates are countries such as Brazil, India, Australia, China and Russia, all of which will be affected by the CBAM.

The WTO DSU process is currently functioning poorly since the US has refused to appoint new Appellate Body (AB) members, so the AB cannot function. This may have influenced the EU's decision to publish the draft regulation at this time, and until new AB members are appointed the prospect of the CBAM being held, definitively, to be incompatible with WTO obligations appears slim.

### Contention 2

#### Squo solves --- new green tech coming and infrastructure bill address warming -- independently, WTO doesn’t guarentee warming success cuz coutnries like China and huge corporatiosn are independent actors who don’t care about WTO guidelines --- will find loopholes/ambigious parts

### Contention 3

#### removing the patent doesn’t solve, companies can still steal indigenous medical ideas- for example the flu vaccine isn’t patented but their card still says it’s been pirated

#### dont solve ALL biopiracy j biopiracy of vaccines

#### IL to biopiracy 🡪biod loss? Stealing plants? How does using some plants cause entire species exist

### biod

#### No impact – humans can survive post-collapse and there’s no relationship between survival and biodiversity – their authors use flawed data analysis

Hough 14 [Rupert, Environmental Scientist with Expertise in Risk Modelling and Exposure Assessment and PhD from Nottingham University, February, “Biodiversity and human health: evidence for causality?” Biodiversity and Conservation, Vol. 23 No. 2, pg. 272-3/AKG]

Large country-level assessments (e.g. MEA 2005; Huynen et al. 2004; Sieswerda et al. 2001) must be interpreted with some caution. Data measured at country-level are likely to mask regional and local-level effects. Apart from the fact that there are limitations to regression analysis in providing any proof of causality, least squares regression models assume linear relationships between reductions in biodiversity and human health and thus imply a linear relationship between loss of biodiversity and the provision of relevant ecosystem goods and services. A number of authors, however, have suggested that ecosystems can lose a proportion of their biodiversity without adverse consequences to their functioning (e.g. Schwartz et al. 2000). Only when a threshold in the losses of biodiversity is reached does the provision of ecosystem goods and services become compromised. These models also tend to assume a positive relationship between socio-economic development and loss of biodiversity. One problem with this expectation is that the loss in biodiversity in one country is not per definition the result of socio-economic developments in that particular country, but could also be the result of socio-economic developments in other parts of the world (Wackernagel and Rees 1996). Furthermore, the use of existing data means researchers can only make use of available indicators. Unlike for human health and socio-economic development, there are no broadly accepted core-set of indicators for biodiversity (Soberon et al. 2000). The lack of correlation between biodiversity indicators (Huynen et al. 2004) shows that the selected indicators do not measure the same thing, which hinders interpretation of results. Finally, there is likely to be some sort of latency period between ecosystem imbalance and any resulting health consequences. To date, this has not been investigated using regression approaches. Finally, it is thought that provisioning services are more crucial for human health and well-being that other ecosystem services (Raudsepp-Hearne et al. 2010). Trends in measures of human well-being are clearly correlated with food provisioning services, and especially with meat consumption (Smil 2002). While \*60 % of the ecosystem services assessed by the MEA were found to be in decline, most of these were regulating and supporting services, whereas the majority of expanding services were provisioning services such as crops, livestock and aquaculture (MEA 2005). Raudsepp-Hearne et al. (2010) investigated the impacts on human well-being from decreases in non-food ecosystem services using national-scale data in order to reveal human well-being trends at the global scale. At the global scale, forest cover, biodiversity, and fish stocks are all decreasing; while water crowding (a measure of how many people shared the same flow unit of water placing a clear emphasis on the social demands of water rather than physical stress (Falkenmark and Rockstro¨m 2004)), soil degradation, natural disasters, global temperatures, and carbon dioxide levels are all on the rise, and land is becoming increasingly subject to salinization and desertification (Bennett and Balvanera 2007). However, across countries, Raudsepp-Hearne et al. (2010) found no correlation between measures of wellbeing and the available data for non-food ecosystem services, including forest cover and percentage of land under protected-area status (proxies for many cultural and regulating services), organic pollutants (a proxy for air and water quality), and water crowding index (a proxy for drinking water availability, Sieswerda et al. 2001; WRI 2009) This suggests there is no direct causal link between biodiversity decline and health, rather the relationship is a ‘knock-on’ effect. I.e. if biodiversity decline affects mankind’s ability to produce food, fuel and fibre, it will therefore impact on human health and well-being. As discussed in the introduction, the fact that humans need food, water and air to live is an obvious one. All these basic provisions can be produced in a diversity-poor environment. Therefore, to understand whether there is a potential causality relationship between biodiversity in its own right and human health, we need to move beyond the basic provisioning services.