# Biotech Neg 2 - FMPS

# Disad things

## CP – Bioethics Commission

### 1NC

#### USFG should establish a bioethics commission

#### A reestablished bioethics commission solves dual use – establishes public-private partnerships that create norms, pressure and incentives check bad actors

1AC Fox '22 - Professor of Law, Herzog Endowed Scholar, and Director of the Center for Health Law Policy & Bioethics at the University of San Diego School of Law [Dov, Apr 25, "The Biotech Battlefield How to Contend With China’s Risky R&D," https://www.foreignaffairs.com/articles/china/2022-04-25/biotech-battlefield]

PLAYING WITH FIRE

Morally fraught experiments have flourished in China in recent years. In 2017, surgeons at Harbin Medical University defied international condemnation to attempt the first human head transplant. In 2018, a Shenzhen biophysicist implanted embryos edited through experiments that risked introducing destructive mutations into the human gene pool. And in 2019, China’s Institute of Zoology invited a Spanish biochemist to create human-monkey chimeras as organ transplant sources.

These boundary-pushing developments aren’t just the work of a few bad apples. Rogue scientists are the predictable product of a national system that reduces research oversight in Beijing to a “rubber stamp,” according to recent testimony before the World Health Organization by the Chinese medical ethicist Hu Qingli. Indifference is part of the problem. The Chinese Ministry of Health, for instance, ostensibly banned unauthorized stem cell therapies in 2012. But a decade later, pop-up stem cell clinics still hawk untested interventions to repair spinal cords and augment breasts. Corruption is another factor. Incidents of bribery at the China Food and Drug Administration, now known as the National Medical Products Administration, led to mass casualties from at least six tainted drugs meant to treat autoimmune disorders, erectile dysfunction, and other ailments.

Then there is China’s heavy-handed program of biometric surveillance and population control. In 2018, Beijing used Islamic terrorism as a pretext to launch the most technologically sophisticated regime of data mining and collection that the world has ever seen. Drones with facial recognition cameras hover over regions such as Xinjiang while police at checkpoints take mandatory iris scans, blood samples, and genetic tests from Uyghur Muslims. Beijing exports this digital security and mass surveillance architecture to dozens of other countries, including Egypt and Uganda, where they have been used to persecute sexual minorities and religious dissidents.

Even countries that use these tools to promote public health and safety unwittingly supply China with their citizens’ biometric information. According to a Reuters investigation, Shenzhen-based BGI Genomics is amassing and analyzing genetic data on women and fetuses from a noninvasive prenatal test that the firm developed in conjunction with the Chinese military. The kit is marketed in more than 50 countries, including Australia, Canada, Denmark, Germany, India, Pakistan, Spain, Thailand, and the United Kingdom. Roughly 8.4 million women have used it. One BGI study allegedly used a military supercomputer to “map the prevalence of viruses in Chinese women, look for indicators of mental illness in them, and single out Tibetan and Uyghur minorities to find links between their genes and their characteristics.”

China’s top-down approach to biotechnology also has serious implications for family planning. The country’s now lapsed one-child policy was supposed to bring economic prosperity. Instead, it yielded an epidemic of forced sterilizations, abortions, and female infanticide that produced the country’s current lopsided sex ratio and aging workforce. But that experience hasn’t stopped Beijing from experimenting with new forms of genetic control. A 1995 law aimed at “avoid[ing] new births of inferior quality and heighten[ing] the standards of the whole population” requires couples at risk of passing along infectious or hereditary diseases to use long-term contraceptives or postpone marriage until after child-bearing age.

In 2022, moreover, millions of Chinese parents will use state-subsidized “talent tests” to screen offspring for traits such as height, intelligence, memory, extroversion, musical ability, and athletic prowess. These policies of biological selection and enhancement extend beyond family planning. A 2016 Chinese government report, for instance, underscored the potential value of gene editing to boost troops’ combat effectiveness. Former U.S. Director of National Intelligence John Ratcliffe warned in a recent Wall Street Journal op-ed that the Chinese military is working to engineer “soldiers with biologically enhanced capabilities”—from superstrength to altitude sickness resistance.

INNOVATE OR PERISH

Chinese developments in biotechnology demand a U.S. response.the last national bioethics commission lapsed in 2017, and Washington has yet to authorize a replacement. A newly established commission should engage with universities and industries to set norms and expectations around bioethics. Good models for this kind of public-private collaboration already exist. Organizations such as the Secure DNA Project and the Morningside Group—independent coalitions dedicated to safely and fairly governing genetic synthesis and brain-computer interfaces, respectively—are examples of what scientists, ethicists, and others can accomplish together. Future interdisciplinary teams can act as gatekeepers to affirm moral standards and condemn transgressions—for instance, by determining who gets published in high-impact journals and invited to prestigious conferences.

These partnerships can also help bridge ideological differences on issues such as vaccine passports, gene-edited immunity, and challenge trials that pay people to test new therapies for COVID-19. These are debates that democratic societies are well equipped to handle. Four of the world’s biggest democracies—Australia, India, Japan, and the United States—have recognized the existential stakes of life sciences research and recently pledged to collectively tackle “the critical and emerging technologies of the future, beginning with biotechnology.” That work should include establishing a global medical ethics consortium built on international agreements such as the Universal Declaration on Bioethics and Human Rights, treaties such as the Biological Weapons Convention, and multilateral arrangements such as the T-12—a group of technologically advanced democracies.

Still, democratic societies can’t maintain bioethical standards alone. Going forward, the United States and other democracies must engage with authoritarian states, especially on areas of shared interest, including biodiversity, climate change, and highly infectious diseases. A natural starting point is oversight to ensure that Beijing actually implements its Biosecurity Law of 2021—legislation designed to guide Beijing’s policies on everything from bioterrorism to biotechnology. Washington should also focus on developing new treaty guidelines for human experimentation and genetic-information sharing.

THE OLYMPIC SPIRIT

China’s DNA-based approach to picking its 2022 Olympic competitors may look like a harbinger of a grim future. But the country’s athletic history also suggests a path for managing this new form of geopolitical competition.

Between 1988 and 1998, 52 Chinese Olympic athletes tested positive for banned performance-enhancing drugs, including a half dozen gold medal winners. In response to the resulting international outcry, the International Olympic Committee created the World Anti-Doping Agency. Chastened, China developed the world’s most rigorous anti-doping measures—mandating education, exams, and pledges among athletes and coaches. Violators got lifetime bans. The Chinese state also sought to repair its reputation, funding new research and pledging long-term commitments to international anti-doping efforts.

At the time, verification and transparency made it possible to hold China accountable for its ethics violations, and international pressure and the threat of meaningful sanctions drove Beijing to act more responsibly—in sports, anyway. Similar policies could work today in the field of bioethics, helping rein in China’s reckless behavior. In this way, Beijing’s revolutionary Olympic selection process could be the opening the world needs to thrash out the moral status of scientific advances just over the horizon.

#### A commission on bioethics solves dual use – guidelines, research, and framework for development

Childress 17 – professor of ethics at the University of Virginia, founder of the Insitute for Practical Ethics and Public life, author of books and articles in bioethics, served on the National Bioethics Advisory Commission until 2001 [James F. “The Bioethical Approach: The President should establish a commission on bioethics.” UVA Miller Center for Public Policy. May 9, 2017]

In his first year, President Donald Trump should develop a charter for, assign priorities to, and establish by executive order a new presidential commission on bioethics. Even though its membership should be diverse in background, experience, and expertise, it is reasonable for the president to set up a commission that is generally congenial to his administration’s values. The commission’s main function will be to provide advice and counsel to the president. It can also report directly to federal departments and agencies and to congressional committees. Further, its meetings and reports can contribute to public discourse and education about bioethics.

Doing so will build on the best practices of previous presidents, who have used such outside guidance to address complex ethical challenges in the biological sciences, medicine, and health care. The new president can choose from several options in how to design such a commission, and which topics to address. But having such a commission will ensure that thoughtful examination will guide emerging technologies.

Public bioethics is . . . vitally important.

While bioethics, a term coined in 1970, has various meanings, a primary definition features ethical reflection and judgment regarding the biological sciences, medicine, and health care. Bioethical reflection and judgment often focus directly on such activities as clinical care, but public bioethics is also vitally important. It focuses on public policies, many of which fall under the auspices of the executive branch, particularly the office of the president of the United States, who may direct departments and agencies to consider and develop policies on bioethical topics. Many of these initiatives will also involve interactions with Congress and the courts. In addition to public policies, the president may also have a significant impact on public discourse and education in bioethics, which may in turn shape public policies.

Sign warning of ebola virus

In the event of a public health crisis such as a Ebola pandemic, the president should develop ethically acceptable public health policies and practices.

The president’s priorities should include ensuring the retention and implementation of recently updated rules and guidelines for protecting human research participants and, at the same time, facilitating important research; developing a framework for ethically acceptable public health policies and practices in the event of public health crises such as pandemics of Ebola and the Zika virus; and moving forward the still evolving societal and public policy discussion about human gene editing. Each of these subjects involves questions about how best to protect individual liberties while promoting the common good. In addition, other emergent ethical problems, occasioned by scientific and technological breakthroughs, can be helpfully addressed by a presidential bioethics commission just as the advent of human cloning, human embryonic stem cell research, and synthetic biology required the attention of one or more of the last three commissions.

#### Commission solves public bioethics – interdisciplinary review, targeted expertise, and recommendations

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Presidential commission on bioethics

Many presidential actions have implications for bioethical controversies. For instance, Trump’s nomination of federal appellate judge Neil Gorsuch for appointment to the U.S. Supreme Court has implications for such “hot button” bioethical issues as abortion and religious liberties not to provide contraception. Several presidential actions in public bioethics, particularly under the circumstances previously noted, can benefit from a systematic and sustained examination by an interdisciplinary body. For most of the last 40 or so years presidential (or congressional) commissions have shouldered much of this task.

Commission meeting

There are three main types of institutional structures for public bioethics: a standing national commission, a series of commissions, or funding nongovernmental committees.

There are three main types of institutional structures for public bioethics, each with distinct advantages and disadvantages. The first is a standing national commission, with a broad mandate and the opportunity to identify specific areas for attention as well as to respond to presidential requests. A second is a series of commissions with mandates that are more focused, targeted, and limited, having to do with particular subjects, such as organ transplantation, human fetal tissue transplantation research, or human embryo research. A major advantage of a standing commission over a series of subject-limited commissions is that it has time to mature as a deliberative body, to develop practices of collective analysis and reasoning, to be prepared for new challenges, and so forth. A major advantage of a targeted, focused commission is that its members can be selected on the basis of their potential contributions to the specific task at hand, which the committee can pursue with concentrated attention and effort. However, it will still take some time to get each ad hoc committee up and running.

A third possibility is to fund nongovernmental committees to produce reports and make recommendations for the president and other governmental bodies. The specific studies undertaken by committees established by the National Academies of Science, Engineering, and Medicine provide one such model. Often established in response to requests and with support from federal departments or agencies such as the Food and Drug Administration (FDA) or the National Institutes of Health (NIH), these independent committees prepare consensus reports, often on single issues such as, recently, novel techniques for prevention of maternal transmission of mitochondrial DNA diseases. Such committees may appear to be less “political” than a presidential or a congressional commission. However, they have a distinct disadvantage: even though they may include public members as well as experts, their process of developing findings, conclusions, and recommendations is not as open as that of governmental bioethics commissions. They may appear more objective and impartial, but they are less publically transparent.

#### A bioethics commission shapes governmental policy on biotech – solves a laundry list ethical problems – human testing, gene editing, public health

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After Dolly the cloned sheep was born, President Bill Clinton asked the National Bioethics Advisory Commission to prepare a report recommending federal policies on human reproductive cloning.

Each of these three institutional mechanisms can contribute significantly to presidential and other governmental bioethical policy making. Which one is best for a particular topic depends in part on process values such as transparency and efficiency. While not every bioethical topic needs to be addressed by a standing presidential bioethics commission, such a commission has the substantial advantage of being able to address a range of bioethical topics, sometimes interrelated, in public over time and the advantage also of being ready to address fairly quickly new issues when they emerge. For instance, following the announcement of the cloned sheep Dolly’s birth, President Bill Clinton gave his relatively young National Bioethics Advisory Commission 90 days to prepare a report recommending possible federal policies toward human reproductive cloning.

Setting priorities for public bioethics

At this point there are several bioethical topics that the new president—and in some cases a new presidential bioethics commission—should take under advisement. Of the three noted below, one (human gene editing) will require special attention because it unsettles long-dominant bioethical and public policy paradigms.

Research involving human subjects or participants

One of the central areas of public bioethics is research involving human “subjects,” now increasingly called “participants” to emphasize that these individuals collaborate with researchers on behalf of the society and that their (or their surrogate’s) voluntary, informed consent is indispensable. Research involving human participants was the focus of the very first commission, the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1974–78), which was established in response to several scandals in biomedical research. The most notorious scandal was the U.S. Public Health Service’s research for over 40 years on the effects of untreated syphilis on close to 400 African American males in and around Tuskegee, Alabama. The commission’s work led to new regulations to govern federally funded research (and much other research). Other subsequent commissions have reexamined these rules, in part because research involving human participants has changed so much in volume, the number of institutions and researchers involved, international scope, the nature of the research (e.g., involving genetic information), complexity, etc. Now, after several decades, some of the extant rules may underprotect while others overprotect human participants and some make it difficult or burdensome to conduct needed research.

On January 19, 2017, the newly revised Common Rule—the set of federal regulations for ethically conducting research involving human subjects—was published in the Federal Register, following discussions that had germinated since its original enactment in 1991, deliberations that started in earnest in 2011, and broad input throughout the extended process of rulemaking. The new rule, which is scheduled to take effect in 2018, might appear, at first glance, to be a good target for revocation given the new administration’s commitment to extensive deregulation. However, this revision of a long-established rule is designed to facilitate valuable research, in part by reducing unnecessary regulatory burdens, for instance, by generally requiring a single Institutional Review Board review in multi-institutional studies and by standing against the needlessly long and complex consent forms. At the same time, it is designed to better protect the rights and welfare of research participants. It would be a mistake to rescind this revised Common Rule without a thorough review through one of the three mechanisms of public bioethics described above.

An ethical framework for public health

In an era of globalization, marked by fast and easy travel, serious threats from infectious diseases confront the world. Ebola and the Zika virus are just two recent examples, and the World Health Organization has identified a number of other potentially serious threats. The new presidential commission should build on the work on public health ethics (developed in the context of Ebola) by the (current) Presidential Commission for the Study of Bioethical Issues, and on earlier work by the Ethics Subcommittee of the Advisory Committee to the Director of the Centers for Disease Control and Prevention (CDC). This is particularly important not only because of the recurrent threat of epidemics and pandemics but also because in 2013 the Advisory Committee voted to terminate its Ethics Subcommittee and to set up ethics workgroups on an ad hoc basis. In view of society’s tendency to lurch from one crisis to another, the new presidential commission could and should attend more systematically to several critical issues in public health to create a clear and practical framework to guide policy. These issues include reduction of disparities in population health in outbreaks of infectious diseases; the fair and equitable distribution of scarce goods, such as vaccines, in a crisis; and the conditions for justifiable restrictions of liberties, for instance, through quarantine and isolation. This could enable the president to take the lead in developing a policy framework to address public health crises, which require federal and state action.

DNA double helix

CRISPR is a kind of molecular scissors or nanoscissors that is more precise than its predecessors for gene editing.

Human gene editing

Long the subject of science fiction, human genetic engineering in the form of gene editing is now emerging as a realistic possibility thanks to major scientific and technological breakthroughs. One such technology, CRISPR/Cas9, is a kind of molecular scissors or nanoscissors that is both easier to use and more precise than its predecessors. It is being readied for phase I cancer trials involving human participants in the U.S. and in China. Other new gene editing technologies are already in early clinical trials.

For several decades, two supposedly bright lines have delimited policies and practices of human genetic modification. The first line divides somatic gene modification, which involves cells that do not pass on genetic modifications to offspring, from germ-line modification, which involves cells that pass on genetic modifications to offspring and future generations. The second line divides gene therapy (i.e., treatment or prevention of a disease, such as cancer) from genetic enhancement (i.e., improving nondiseased capabilities, such as intelligence or height). While these lines are not as bright as commonly supposed, they remain important.

Versions of the following figure been widely used in efforts to depict these lines:

These distinctions became embedded in public policy, for example, in the guidelines of the NIH’s Recombinant DNA Advisory Committee (RAC), especially to assure the public that it would be possible to move forward with “human gene therapy” trials without legitimating either germ-line interventions or genetic enhancements that are considered ethically problematic. An intervention in Category I (above) has generally been deemed acceptable, if it is determined to be safe for the recipient, because it is similar to other medical treatments intended to provide a medical benefit to the individual patient (such as a bone marrow transplant for leukemia).

Future generations cannot consent to these risks, which are imposed on them and which may be irreversible.

Interventions in Category II cross the line into germ-line modification—for instance, genetic modifications of embryos are heritable and can thus be passed on to future generations. Pressure will almost certainly emerge in the near future to move to germ-line interventions because, in some cases, this may be the most effective and efficient way to treat/prevent some diseases and because those same treatment/prevention benefits will be passed on to future offspring. However, major concerns immediately arise. One has to do with the experimental genetic modification of embryos. Another concern focuses on the unquantifiable risk to future generations. Still another concern is that future generations cannot consent to these risks, which are imposed on them and which may be irreversible. This can even be considered interference with evolution. Whereas proponents of interventions in Category II sometimes insist we should seize this power and speed up the process of evolution, critics respond that we lack the capacity to reliably predict and control these changes and their effects as well as the ethical wisdom to assess them. Finally, concerns arise about the possible negative impact of these genetic modifications on attitudes and practices toward persons with disabilities. And simmering eugenic forces should not be neglected.

Even though we can clearly locate some interventions on the side of treatment/prevention and others on the side of enhancement, the line is not always easy to draw. And, while there is substantial opposition to enhancement in either somatic or germ-line interventions, it is much greater in the latter, as expressed in worries about “designer babies.” Social justice concerns arise for both somatic and germ-line enhancement: the “haves” would benefit more than the “have nots,” further deepening social inequalities. Such concerns figure in public opinion surveys. For instance, a Pew Research Center report in 2016 found that the U.S. public is wary of biomedical technologies to enhance human abilities and that their fears and concerns outweigh their hopes.

The U.S. government needs to continue to play a pivotal, though nonexclusive, role in the still nascent complex global governance of gene editing.

#### **Bioethics commissions solves global governance – influences social norms and professional standards**

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Finally, the new president and his administration will have to consider the governance of gene editing, both domestically and globally. Of course, governance is not limited to governments and their policies. It encompasses various other social institutions as well, and its exercise is not limited to laws and regulations but involves professional standards and the like. Nevertheless, there is a central role for government, and the U.S. government needs to continue to play a pivotal, though nonexclusive, role in the still nascent complex global governance of gene editing, as discussed, for instance, in the 2015 International Summit on Human Gene Editing. The U.S. government’s laws and regulations, as well as its investment decisions, will be crucial both tangibly and symbolically.

Given the perennial problems in health care and in research involving human participants, the outbreaks of serious and even deadly infectious diseases, and the rapid pace of global scientific and technological change, the new president will surely confront and need to address several bioethical problems. How the president meets these challenges and helps our government, the scientific and biomedical communities, and the public deliberate about appropriate policies and practices in response will be one of the tests—and measures—of our nation’s new chief executive.

#### Bioethics advisory commission solves dual use regulations – guides policy in emerging tech and public sector

Gavin 2/3 – director of executive communications at National Academies [Molly. “NAS and NAM Presidents, Other Experts Urge Biden Administration to Reinstate Presidential Bioethics Commission” News Release, National Academies. March 2, 2022]

News Release | March 2, 2022

WASHINGTON — The Biden administration should reinstate a presidential bioethics advisory commission to help inform and guide policy decisions that have bioethical implications, said National Academy of Sciences President Marcia McNutt and National Academy of Medicine President Victor J. Dzau in a recent letter to Alondra Nelson, interim director of the White House Office of Science and Technology Policy. The letter was delivered with an independent white paper underscoring the need for such a commission, authored by an ad hoc working group of experts in medicine, bioethics, and law that includes members of the past three presidential commissions for the study of bioethical issues.

“Over the past five decades, U.S. bioethics commissions under both Democratic and Republican administrations have helped guide the development of government policy affecting millions of U.S. citizens in important ways,” says the letter from McNutt and Dzau. “However, a presidential commission on bioethics has not been appointed since 2017. As a result, despite many current events and developments with critical bioethics implications, important government decisions are being made without such a commission to examine, review, and help inform U.S. policymaking.”

The accompanying white paper — written by a working group led by co-chairs Susan Wolf, Regents Professor, University of Minnesota, and Alta Charo, Warren P. Knowles Professor Emerita of Law and Bioethics, University of Wisconsin-Madison — identifies existing and emerging topics for which a presidential bioethics commission could provide analysis, advice, and public consensus building, such as pandemic-related public health decisions, the use of potentially biased artificial intelligence and adaptive algorithms in health care research and clinical care, or bioethical issues raised by climate change.

For instance, “No prior bioethics commission has canvassed the ethical issues raised by research and interventions that can alter ecology …. Nor has any commission addressed the health and equity implications of heat waves and heat stress, changes in the distribution of vector-borne diseases, flooding and displacement, and increased ozone pollution, to mention just a few effects of climate change,” the white paper says.

“Such a commission can address the values conflicts underlying policy debates, promote public consensus, and inform decisions by regulatory and policymaking bodies that may not be authorized to consider broad ethical issues.”

The full text of the letter and the white paper are also available here.

The National Academies of Sciences, Engineering, and Medicine are private, nonprofit institutions that provide independent, objective analysis and advice to the nation to solve complex problems and inform public policy decisions related to science, technology, and medicine. They operate under an 1863 congressional charter to the National Academy of Sciences, signed by President Lincoln.

#### Bioethics commissions create new regulatory frameworks for emerging threats – promotes consensus and norms

Wolf et al 2/28 -- Professor of Law, Medicine & Public Policy at the University of Minnesota, JD [Susan M., R. Alta Charo, JD, Alexander Morgan Capron, LLB, Rebecca Dresser, JD, MS, Helene D. Gayle, MD, MPH; Christine Grady, MSN, PhD; Marion Hourdequin, PhD; Isaac Kohane, MD, PhD. “Recommending a New Presidential Bioethics Commission.” National Academies of Science, Engineering, and Medicine. 2/28/2022.]

Need for a New Commission The United States has not had a federal bioethics commission since 2017. In the interceding five years, a global pandemic has raised profound ethical issues in public health research, clinical practice, and public policy–issues that require attention to the public good as well as individual autonomy. Those include how to formulate public policy in the face of uncertainty, how best to conduct rapid research on vaccines and treatments, how to reconcile population research with individual patient needs, how to allocate access to therapeutic interventions in times of scarcity, and how to address the devastating health disparities the pandemic has revealed. 3 As noted in Appendix A, the President’s Commission was followed by a failed effort to create a Biomedical Ethics Board in the legislative branch with six Senators and six Representatives equally divided between the two major parties. More specialized executive branch panels have included the Advisory Committee on Human Radiation Experiments (1994-95) established to investigate human radiation experiments and the intentional release of radiation between 1944 and 1974 and to recommend appropriate standards for evaluating the responsibility of individuals and institutions for those past acts. 4 The Brain Research Through Advancing Innovative Neurotechnologies® (BRAIN) Initiative. https://braininitiative.nih.gov/. 3 At the same time, our world faces a climate crisis that imperils the natural environment and human health. No prior bioethics commission has canvassed the ethical issues raised by research and interventions that can alter ecology, including genetic modification of insect populations to control transmission of certain deadly diseases, or using genome editing to rescue endangered species and perhaps even to revive some that are extinct. Nor has any commission addressed the health and equity implications of heat waves and heat stress, changes in the distribution of vector-borne diseases, flooding and displacement, and increased ozone pollution, to mention just a few effects of climate change. Yet ethical concerns—including our obligations to future generations—are central to understanding and solving these environmental problems. Another domain not previously addressed by a bioethics commission is the growing integration of artificial intelligence (AI), machine learning, and software algorithms into medical and public health practice. The ethical challenges are profound. If complex algorithms are based on inadequate or unrepresentative data, their use risks magnifying and cementing racial and other bias into research and clinical care, while undermining professional expertise and shared decision-making with patients. Regulators face daunting challenges, such as ensuring the quality of adaptive algorithms that evolve as they are used. Ethical issues raised by AI in health care and public health call for exactly the kind of path-breaking analysis and consensus building that a bioethics commission can offer. A bioethics commission could also advance analyses of existing technologies whose rapid development continues to raise unresolved issues. Genetic and genomic technologies, for example, offer an expanding range of predictive and screening tools – including direct-to-consumer tests -- with continuing debate over appropriate uses and safeguards. The growing use of such tools risks placing undue emphasis on genetics to the exclusion of social determinants of health. Genetic testing is also being used in areas such as immigration and law enforcement, raising privacy issues distinct from those raised by uses in health care. Meanwhile, emerging technologies that can alter the genetic makeup of animals and human beings challenge current oversight systems to protect responsible innovation while preventing abuse.

## CP – United Nations

### 1NC

#### Th United Nations should set global standards for biotechnology.

#### **UN action sets impartial norms that regulate the dual-use of biotech**

Camacho 18 (Juan Jose Gomez Camacho, Permanent Representative of Mexico to the United Nations, “Keeping Pace with an Accelerated World: Bringing Rapid Technological Change to the United Nations Agenda”, United Nations Chronicle, December 2018, <https://www.un.org/en/un-chronicle/keeping-pace-accelerated-world-bringing-rapid-technological-change-united-nations>, WC-NAS)

Humanity is at a crossroads: we face both the opportunities and challenges of a range of powerful and emerging technologies that will drive radical shifts in the way we live. The accelerated pace at which technologies such as artificial intelligence (AI), biotechnology, robotics, automation, advanced materials and quantum computing are developing, is already transforming the systems that we take for granted today. From how we produce and transport goods and services to the way we communicate, collaborate or even elect our governments, rapid technological change—which often happens at an exponential pace—is reshaping how we experience the world around us.

The good news is that this period of rapid technological change is in its early stages and is still under our control. Standing at this crossroads means that we bear a huge responsibility, since new technologies can increase inequality among and within countries, replace obsolete labour forces, affect vulnerable groups, foster a concentration of critical knowledge and wealth, and pose significant ethical questions. However, such technologies can also be used positively to accelerate achievement of the 17 Sustainable Development Goals (SDGs) and their 169 targets.

According to the World Bank, the proportion of jobs at risk of automation is higher in developing countries than in developed countries. From a purely technological standpoint, two thirds of jobs in developing countries are susceptible to automation in the coming decades. However, the effects of that process could be moderated by lower wages and slower adoption of technology1 in those countries. Using an adjusted measure based on technological feasibility, the share of employment that is susceptible to automation by country ranges from 55 per cent in Uzbekistan to 85 per cent in Ethiopia,2 while the Organisation for Economic Co-Operation and Development average is 57 per cent.

On the other hand, using smart grids, big data and the Internet of things can help reduce energy consumption, balance energy demand and supply, and ensure and improve the management of energy distribution, while increasing the role of renewable sources by allowing households to feed surplus energy from solar panels or wind turbines into the grid. The cost of solar cells has dropped by a factor of more than 100 in the last 40 years, from $76.67 per watt in 1977 to $0.029 per kilowatt-hour (kWh) in 2017. Solar energy is now the cheapest generation technology in many parts of the world.3

National and international institutions are challenged to keep pace with the economic and social consequences of new technologies, which is why there is a growing need for a discussion on this issue. The United Nations, valued for its normative and impartial standard-setting role, provides a unique platform for important orientation on this phenomenon. To achieve the 2030 Agenda and ensure that no one is left behind, Member States, along with the private sector, academia, civil society and other relevant stakeholders, must develop international frameworks to promote and ensure that the benefits of this revolution are evenly shared.

### 1NC - Internal

#### UN key to codifying international law

UN No date (United Nations, “Uphold International Law”, No Date, <https://www.un.org/en/our-work/uphold-international-law#:~:text=The%20UN%20Charter%20gives%20the,and%20report%20to%20the%20plenary>., WC-NAS)

THE GENERAL ASSEMBLY AND INTERNATIONAL LAW

The UN Charter gives the General Assembly the power to initiate studies and make recommendations to promote the development and codification of international law. Many subsidiary bodies of the General Assembly consider specific areas of international law and report to the plenary. Most legal matters are referred the Sixth Committee, which then reports to the plenary. The International Law Commission and the UN Commission on International Trade Law report to the General Assembly. The General Assembly also considers topics related to the institutional law of the United Nations, such as the adoption of the Staff Regulations and the establishment of the [system of internal justice](https://www.un.org/en/internaljustice/).

GENERAL ASSEMBLY - SIXTH COMMITTEE (LEGAL)

The General Assembly’s [Sixth Committee](http://www.un.org/en/ga/sixth/) is the primary forum for the consideration of legal questions in the General Assembly. All UN Member States are entitled to representation on the Sixth Committee as one of the main committees of the General Assembly.

#### Effective ILaw key to combatting climate change

Hunter 21 (David Hunter, “International Environmental Law”, American Bar Association, January 5th 2021, <https://www.americanbar.org/groups/public_education/publications/insights-on-law-and-society/volume-19/insights-vol--19---issue-1/international-environmental-law/>, WC-NAS)

Profound environmental changes caused by the increasing scale of human activity have led many observers to conclude that the planet has entered the “Anthropocene”—a geologic era signified by human impact on the biosphere. International environmental law is the set of agreements and principles that reflect the world's collective effort to manage our transition to the Anthropocene by  resolving our most serious environmental problems, including climate change, ozone depletion and mass extinction of wildlife. More generally, international environmental law aims to achieve sustainable development—i.e., development that allows people to have a high quality of life today without sacrificing the quality of life of future generations. International environmental law is thus critical both for addressing specific environmental threats and for integrating long-term environmental protection into the global economy.

But not all environmental threats trigger international (as opposed to solely national or local) response. For countries to sacrifice their autonomy, some advantage must be gained in addressing the problem collectively. Typically, countries turn to international cooperation where (l) the environmental impacts are transboundary (such as pollution into the Great Lakes) or global (such as climate change); (2) some international activity contributes to environmental harm, for example, the international trade in elephant ivory or the killing of whales; or (3) international coordination of financial or technical support can catalyze action (for example, for the global conservation of biological diversity). In these circumstances, international cooperation—whether in the form of a binding treaty or a non-binding “soft law” agreement—is necessary for an effective response to the environmental challenge.

Throughout most of the last century, international environmental law primarily reflected bilateral or regional disputes over shared resources, such as rivers or lakes that cut across national boundaries. These disputes led to diplomatic tensions that either resulted in an international legal case or were settled through relatively narrow regional or bilateral treaties. The most famous and important of these disputes was the Trail Smelter Arbitration, where Canada was held responsible for air pollution entering the United States.  
In recent years, bilateral disputes involving for example Slovakia’s proposed construction of a dam on the Danube River near Hungary, Uruguay’s authorization of two pulp mills that threatened to pollute Argentina, and Australia’s challenge of Japanese whaling operations, highlight the importance of international law in peacefully resolving environmental conflicts between countries.  Such disputes are resolved at the International Court of Justice, the UN Law of the Sea Tribunal or other international tribunals.

In addition to the peaceful resolution of environmental conflicts, international environmental law also is relied on to balance the planet’s ecological limits with the world’s ever-growing economy to prevent irreversible environmental harm in the first place. Today, governments regularly meet to address the general sustainability of the planet or to negotiate one of the literally hundreds of bilateral, regional and global treaties aimed at managing a specific environmental challenge before it’s too late.

Sustainable Development Summits

The United Nations first convened countries to address the global environment at the 1972 UN Conference on the Human Environment in Stockholm.  The Stockholm conference highlighted the international aspects of emerging environmental challenges and legitimized the environment as an area for international cooperation.  The Stockholm conference also created the United Nations Environment Programme (UNEP)— an institutional home for environmental protection in the United Nations. Headquartered in Nairobi, Kenya, UNEP continues today to be a leading catalyst for global environmental cooperation.

Since the 1972 Stockholm Conference, the world has met regularly in a series of major summits aimed at shifting the world generally toward a path of sustainability.  The most important by far has been the 1992 UN Conference on Environment and Development (UNCED), also known as the Rio "Earth Summit.'  Virtually every world leader attended the Earth Summit, where they  agreed to three major treaties (addressing climate change, biological diversity and desertification), and a 500-page blueprint for sustainable development (known as Agenda 21).  Most importantly, Rio marked the formal acceptance of sustainable development as the goal of a modern economy and of international environmental law. Indeed, since Rio the concept of sustainable development has received nearly universal acceptance among every sector of international society.

Sustainable development was also the organizing framework for major environment and development summits in Johannesburg in 2002 and Rio again in 2012 (the Rio+20 Summit).  These summits are big affairs, attended not only by governments but also by thousands of civil society and private sector representatives.  Reflecting this wider audience, the recent UN-sponsored Summits have promoted public-private Partnerships for Sustainable Development and more recently led to adoption of the Sustainable Development Goals (SDGs).  These non-binding goals serve as a strategic plan for coordinating the global community toward achieving concrete, measurable goals by  2030.

#### Effective ILaw prevents extinction– puts a cap on conflict

Pickering 14 (Heath Pickering, “Why Do States Mostly Obey International Law?, ” E-International Relations, February 4th 2014, <http://www.e-ir.info/2014/02/04/why-do-states-mostly-obey-international-law/>)

All states in the contemporary world, including great powers, are compelled to justify their behaviour according to legal rules and accepted norms. This essay will analyse the extent to which states comply and the reasons for their compliance. Essentially, the extent to which states follow their international obligations has developed over the past 400 years. From a historical perspective, international obligations and accepted norms were founded following two key developments in European history. In 1648, the Treaty of Westphalia ended the Thirty Years’ War by acknowledging the sovereign authority of various European princes.[1] This event marked the advent of traditional international law, based on principles of territoriality and state autonomy. Then in 1945, again following major wars initiated in Europe, states began to integrate on a global scale.[2] The UN Charter became the international framework for which norms of sovereignty and non-intervention were enshrined. Now, as a result of modern technology, communication, transport, and more, the evolving process of Globalisation, “The internationalization of the world”,[3] has provided an opportunity for international law and accepted norms to reach every corner of the globe. However, the development of international law and accepted norms has not compelled states to comply all the time. Instead, the trend over the past 400 years has shown that states have been mostly compelled to justify their behavior according to legal rules and accepted norms. The emphasis on mostly should be stressed. Even though the UN Charter does not permit violating sovereignty through the use of aggression, the extent to which states follow their international obligations varies. Louis Henkin’s book, How Nations Behave, articulates the extent of compliance.[4] He said, “Almost all nations observe almost all principles of international law and almost all of their obligations almost all the time”.[5] As such, the trend in contemporary international relations is that war remains possible, but it is much less acceptable now than it was a century or even half a century ago.[6] The benefit of the trend is that almost full compliance is said to lead states into a pattern of obedience and predictable behaviour.[7] Therefore, conflict only arises when countries fail to comply. States attempt to manage the friction with ongoing compliance through the principle of pacta sunt servanda – the adherence to agreements.[8] Over time, such agreements to norms and treaties have diminished sovereignty, increased international institutions, given rise to non-state actors, and rapidly developed the contemporary customary and treaty based rules system.[9] The evolution of the dispute-settlement procedures of the World Trade Organisation (WTO), the establishment of the International Criminal Court (ICC), and the establishment of numerous global treaties illustrate states agreeing voluntarily to give up a portion of their sovereignty.

#### ICs generate reputational costs that solve territorial disputes

Kim 16 – Hyunki, MA in international relations at the University of Chicago, “DECISIONS THAT BIND: THE ROLE OF REPUTATION COSTS IN TERRITORIAL DISPUTES”, Alumni Perspectives: APCSS, <https://apcss.org/wp-content/uploads/2017/01/Kim_Reputation-Costs-and-Binding-Settlement_Hyunki_Final.pdf> [publish date determined by most recent citation]

Implications

This paper attempted to explain the role of international pressure and states’ perception of reputation costs in territorial disputes. States are generally reluctant to enter binding settlement in territorial disputes because the process ties the disputants to an outcome prior to a decision rendered about the contested territory. However, this type of agreed settlement procedure can be more effective in resolving disputes because states are accountable to any decision reached. While states are generally reluctant to enter this type of arrangement, they are incentivized to make this decision when reputation costs have been triggered by external pressure. This pressure is particularly effective when salient actors are involved, such as major powers, regional forums, or international organizations like the UN. The disputant who was once unwilling to enter binding settlement is incentivized to change its stance in order to stem the pressure from the international community and avoid reputation costs.

These mechanisms are not generalizable to all disputes, but provide important implications for other cases, like the South China Sea disputes. The Philippines’ use of an international mechanism to advance its claims has important implications for understanding the role of international pressure and reputation costs in conflict management. When there is power asymmetry in a dyad, the country with no chance of winning a military contest or wielding military leverage can turn to courts to resolve territorial claims. This is an attractive strategy for both Belize and the Philippines.31 By placing the contested issue in the context of international law, the disputes come under scrutiny by the international community. By doing so, China and Guatemala are confronted with significant pressure to submit to binding settlement. For Guatemala, such pressure was significant enough to make the decision to bind itself. For China, whether it will ever decide to enter binding settlement is unclear.

Although China has expressed immediate refusal to participate in arbitration proposed by the Philippines, it is premature to declare China is immune to reputation costs\*\*\*

. While China may be reluctant to give up its control over the territories, changing policies elsewhere demonstrates China is responsive to reputation costs in certain circumstances. For instance, China joined the UN regime on Human Rights as it was criticized by the US and other UN members on its domestic human rights policies. Although China has not changed its stance on arbitration with Philippines, China’s recent North Korea policy demonstrates a significant departure from previous partnership. China has helped sustain Kim Jong-Un regime, by opposing harsh international sanctions in UNSC. For this reason, China has been viewed as a crucial partner to achieve North Korea’s denuclearization if China participates in international sanctions. After North Korea’s fourth nuclear test in 2016, China for the first time has agreed on consistent implementation of UNSC resolution to impose sanctions against North Korea. When China is responsive to reputation costs and when it is not depends on the salience of an issue agenda to national objectives and regime survival. But given that China is a reputation seeker, the range of those circumstances in which China may be susceptible to international pressure may yet widen over time.

### 2NC - Bioethics

#### UN standards are uniquely key to international bioethics­– creates applicable human dignity norms

UNESCO No Date (The United Nations Educational, Scientific, and Cultural Organization, “Universal Declaration on Bioethics and Human Rights”, <https://en.unesco.org/themes/ethics-science-and-technology/bioethics-and-human-rights>, WC-NAS)

The background

A growing number of scientific practices have extended beyond national borders and the necessity of setting universal ethical guidelines covering all issues raised in the field of bioethics and the need to promote the emergence of shared values have increasingly been a feature of the international debate. The need for standard-setting action in the field of bioethics is felt throughout the world, often expressed by scientists and practitioners themselves and by lawmakers and citizens.

States have a special responsibility not only with respect to bioethical reflection but also in the drafting of any legislation that may follow. In the field of bioethics, whilst many States have framed laws and regulations aimed at protecting human dignity and human rights and freedoms, many other countries wish to establish benchmarks and sometimes lack the means to do so.

At its 31st session in 2001, the General Conference invited the Director-General to submit “the technical and legal studies undertaken regarding the possibility of elaborating universal norms on bioethics”.

At the request of the Director-General, the International Bioethics Committee (IBC) therefore drafted the [Report of the IBC on the Report of the IBC on the Possibility of Elaborating a Universal Instrument on Bioethics](http://unesdoc.unesco.org/images/0013/001302/130223e.pdf) [PDF, 82 KB] finalized on 13 June 2003. The Report examines some issues in bioethics that could be addressed in an international instrument and illustrates how the elaboration of such an instrument could contribute to and support international efforts being made to provide ethical guidelines in matters related to recent scientific developments. The Report explores the likely form and scope of an instrument as well as its value in terms of education, information dissemination, awareness-raising and public debate.

The mandate

At its 32nd session in October 2003, the General Conference considered that it was “opportune and desirable to set universal standards in the field of bioethics with due regard for human dignity and human rights and freedoms, in the spirit of cultural pluralism inherent in bioethics” (32 C/Res. 24).

The General Conference also invited “the Director-General to continue preparatory work on a declaration on universal norms on bioethics, by holding consultation with Member States, the other international organizations concerned and relevant national bodies, and to submit a draft declaration to it at its 33rd session” (32 C/Res. 24).

Which instrument?

As to the form of the instrument, IBC – supported by Member States during the General Conference – came out clearly in favour of an instrument of a declaratory nature, at least initially, which would be best suited to a constantly changing context and would enable the broadest possible consensus to be reached among Member States.

The form of the instrument does not prevent its content from contributing to a code of universally recognized general principles of bioethics (such as human dignity, solidarity, freedom of research, respect for privacy, confidentiality, non-discrimination, informed consent, integrity of research and intellectual honesty) insofar as these principles pertain to bioethics. Lastly, an instrument on bioethics must call strong attention to the importance of awareness-raising, information, education, consultation and public debate.

Why UNESCO?

Over the years UNESCO has confirmed its standard-setting role in bioethics. UNESCO has contributed to the formulation of basic principles in bioethics through in particular the [Universal Declaration on the Human Genome and Human Rights](https://en.unesco.org/themes/ethics-science-and-technology/human-genome-and-human-rights), adopted unanimously and by acclamation by the General Conference in 1997 and endorsed by the United Nations General Assembly in 1998, and the [International Declaration on Human Genetic Data](https://en.unesco.org/themes/ethics-science-and-technology/human-genetic-data), adopted unanimously and by acclamation by the General Conference on 16 October 2003.

Apart from the fact that ethical issues related to the advances in life sciences and their applications were and still are highly topical, the depth and extent of their roots in the cultural, philosophical and religious bedrocks of various human communities were reason enough for UNESCO, the only organization whose fields of competence include the social and human sciences, true to its ethical vocation, to take the lead in this initiative.

## DA – GMOs

### 1NC

#### No European GMOs now, but the plan is a trojan horse to break legal barriers.

CEO 2021 - Corporate Europe Observatory has been tracking the industry’s lobby attempts to get new GM techniques deregulated since 2015   
["Derailing EU rules on new GMOs," Mar 29, https://corporateeurope.org/en/2021/03/derailing-eu-rules-new-gmos]

The biotech industry is waging an ongoing battle to get its new generation of genetic modification techniques excluded from European GMO regulations. This would mean that plants, animals and micro-organisms, made using ‘genome editing’ techniques like CRISPR-Cas, would not be subject to safety checks, monitoring or consumer labelling. Corporate Europe Observatory has uncovered various new tactics used by the biotech industry to prepare the ground for such deregulation. Officials from national ministries were hand-picked for joint strategy meetings with lobbyists; a think-tank set up a new Taskforce with a large grant from the Gates Foundation to pave the way to GM deregulation via "climate narratives"; and a lobby platform built around a sign-on letter overstating its backing by research institutes. The European Commission is due to publish a study by the end of April about the new techniques which will provide a basis for further discussion among Member States. Civil society and farming groups call on the EU to prioritise environmental and health concerns, and keep GM safety checks in place.

#### GMOs spread antibiotic resistance – lack of treatment capability, biosolid recycling, and selection advantage magnify the environmental impact

Hilding 19 – Director of Communicatons at Washington State University College of Engineering and Architecture [Tina. “Researchers find persistence of antibiotic-resistant GMO genes in sewage sludge.” WSU Insider. 10/18/19.]

Antibiotic-resistant genes that have been inserted into genetically modified food are able to withstand conventional wastewater treatments.

The findings, contained in a research paper published recently in the journal, Biotechnology and Bioengineering, might point to a previously unknown way that bacteria may become resistant to life-saving antibiotics. The work is based on graduate work done at Duke University by Courtney Gardner, now an assistant professor in WSU’s Department of Civil and Environmental Engineering. She, along with Professor Tim Ginn in the Department of Civil and Environmental Engineering, have recently received a 3-year, USDA grant to continue the research.

Antibiotic resistance, which bacteria adopt in response to interactions with the drugs, is increasing around the world and threatens the ability to treat many common infections and diseases.

“We determined that extracellular DNA released from digestion appears to be ubiquitous in wastewater treatment in the U.S. – it’s much more persistent in the environment than we originally thought,” said Gardner. “Historically, I think it’s likely that this probably has contributed to the spread of antibiotic resistance in the environment.

“The magnitude of that contribution is still unknown — it is something we are trying to determine,” she added.

Unlike in Europe, which has largely banned the cultivation of genetically-modified crops for human consumption, GMOs are a common part of the food supply in the United States. Although the practice is becoming less common, companies have in the past added antibiotic resistant genes in their modifications as a helpful marker to differentiate genetically modified plant cells. About 130 lines of genetically modified crops contain such genes. Researchers have found that when people eat these foods, the incorporated genetic material moves through the digestive system, and that these genes can be released into the environment, including into wastewater treatment plants.

Meanwhile, half of the biosolids produced in the U.S. after wastewater treatment are used as agricultural fertilizers every year, providing a potential pathway for moving the antibiotic resistant genes and bacteria through the environment.

In the new study, funded by the National Science Foundation, the researchers added antibiotic resistant genes to reactors to mimic the most common wastewater treatment for 30- and 60-day treatments that generate class A biosolids. To the mix, they added common antibiotics, such as penicillin, that are also often found in wastewater.

The researchers found that fragments of antibiotic resistance genes, especially longer strands, persisted through the treatment process. They believe that the DNA strands latch onto particles in soil or sediment in the digesters. There they lie protected from the processes that generally kill microbes and, instead, become a reservoir of genetic material.

Furthermore, the researchers found that the genes appeared to be taken up by bacteria in the sludge. The researchers theorize that the bacteria in sewage, such as staphylococcus, are stressed when they encounter antibiotics. By picking up the strands of antibiotic-resistant DNA, they gain a selection advantage.

In their new study, Gardner and Ginn will now be tracking and modeling the long-range transport of antibiotic resistant genes in agricultural fields. They will also be studying silencing RNA molecules, which are used in modern genetically modified crops to silence undesirable crop traits. The researchers want to know whether the remnant genetic material from silencing RNA molecules might bind with other bacteria in the environment to unintentionally silence desirable traits.

“Our concern from a genetic and bacterial standpoint is that there are probably some non-target matching sequences between the silencing RNA and environmental microbes and that it could cause the loss of a gene and possibly a functional gene,” said Gardner.

#### Antibiotic resistant bacteria have the potential to destroy all life on earth

Garrett 2016 - senior fellow for global health at the Council on Foreign Relations  
Laurie, "Anti-biotic resistant bacteria and the world's peril," Sep 19, https://blogs.scientificamerican.com/guest-blog/antibiotic-resistant-bacteria-and-the-world-s-peril/

Welcome to the Anthropocene, the era in which one species—human beings—so utterly dominates the planet that all of the driving forces of climate, oceans, geology, air and every other life form on Earth are controlled by the activities of humanity. Most of the damage is thoughtless. Humans don’t decide to pollute, they just do so. People don’t make a choice to lower the numbers of oxygen-producing trees on the planet, they just chop them down without thinking about it. Among the most dangerous of these thoughtless actions executed by our species is wild misuse of antibiotics. On September 21, the United Nations General Assembly is convening a special session to look at ways to curb use of precious medicinal drugs that are swiftly being outwitted by drug-resistant bacteria, making everything from a scraped knee to a bout of pneumonia far more dangerous and difficult to treat. But that focus, important as it is, remains limited to human use of chemicals and concern about their misuse to our species’ health. Genuine governance and stewardship in the Anthropocene requires a far broader look at what our activities mean for the planet, writ large. At the most basic levels of life every single system on Earth is controlled, or influenced, by microbes—microscopic creatures ranging from nano-sized viruses to enormous colonies of bacteria; from populations of microbes in the depths of the oceans to the inside of the human gut. A human being is made up of about 30 trillion cells and 39 trillion microbes, most of which are indispensable to our mental and physical health. If all the viruses and parasites swarming inside and on the skin of a human being are tallied the microbe-to-cell ratio is about ten-to-one. The microbes—collectively known as the Human Microbiome—digest our food, help us do battle with invading pathogens, clean our skin and provide us fuel. Life without microbes is no life at all. Antibiotics kill bacteria, and as anybody who has been on a long course of the drugs to treat an ailment knows, the medicine is indiscriminate, knocking off not only invaders like the bugs that cause pneumonia and ear infections, but also those that prevent stomach aches and constipation in response to ingestion of food. Human overuse or misuse of antibiotics has bred the emergence of Superbugs that are not only resistant to the drugs, but may be able to surge in numbers within a person’s gut, for example, leading to dangerous imbalances in bacterial populations that then cause diabetes, some types of heart disease, depression and an enormous range of common diseases. The Earth has its own microbiome, representing about a third of the weight of all biological material and life forms on the planet. And it is every bit as indispensable to the planet as your microbiome is to your personal health. Microbes living on the surface of the oceans, for example, aerosolize and end up in the atmosphere, where water droplets collect on their surfaces, forming clouds . Eliminating those microbes would directly affect rainfall. More oxygen that humans breathe is made by microbes than plants. And even the plants rely upon the microbiome of soil to transfer nutrients into their roots, allowing trees and forests to make more oxygen for humans to breathe. So it should be with some considerable alarm that we consider the killing potential manmade antibiotics have for Earth’s microbiome. When people, or our pets and livestock, take antibiotics, these substances and possible resistant bacteria are passed via sewage and septic tanks into water systems and the seas. Ton for ton, 80 percent of antibiotics are used to treat livestock, not to cure infections, but to make them fatter. Most of those chemicals, which are routinely loaded into animal feed and dumped into aquaculture systems, are chemical identical or closely similar to human treatments. As the human population increases and wealth grows, demand for animal protein is soaring. Researchers estimate that for every 2.2 pounds of cattle weight 45 milligrams of antibiotics were used as growth promoters; for chickens that’s 148 milligrams per 2.2 pounds and for pigs it’s a whopping 172. On a global scale that translates into about 63,000 tons of antibiotics used in agriculture in 2010, which researchers predict will soar to 106,000 tons over the next 14 years. Today the United States, alone, uses 25 million pounds of antibiotic products on livestock every year. Animal poop has always been a part of the environment, and played a big positive role in supplying bacteria, viruses and parasites for the Earth Microbiome. But the once-diverse range of large animals that roamed the planet has shrunk, with 92 percent of the poopers lost and the entire Earth Microbiome fertilized by just eight percent of the species that existed after the Ice Age, most of them used as livestock or pets by Homo sapiens. This means there are fewer checks-and-balances in nature to offset the monumental impact human and livestock poop are having on the Earth Microbiome. We are filling the world with livestock and human pathogens and bacteria, many of the microbes rendered ultra-virulent or drug resistant by the barrage of antibiotics we and our animals are subjected to. For example, a super-toxic form of E.coli bacteria has thrived in the antibiotic-saturated cattle industry, and turned up killing wild deer. Wildlife all over the world, from the depths of the seas to the Himalayas, are developing antibiotic-resistant bacterial diseases. Superbugs that are resistant to nearly every antibiotic on Earth are bred, for example, in pig farms in China, flow from sewage systems or river dumps into the oceans, infecting fish. Seagulls feeding on those fish carry highly drug resistant bacteria all over the world. Normal ocean microbes that convert sunlight into oxygen that humans breathe form microscopic vessels packed with their genes—including ones for drug resistance—that bob across the seas, to be absorbed by ocean life, even seals and whales. The dangerous organisms collect along any solid surfaces they come in contact with, forming drug resistant biofilms in which genes for resistance are swapped between microbes, even across species, making those biofilms giant lending libraries of genetic tools for devastation of the Earth Microbiome and, ultimately, human health. Proper wastewater treatment can greatly reduce the threat to the environment, eliminating most drug-resistant organisms. But most of the world’s waste goes untreated. Worse, cheap waste treatment – the type used in most of the world—basically mixes chlorine with poop, killing off bacteria. But new research shows chlorine treatment can actually promote a surge in antibiotic-resistant microbes, in a sense purifying the waste into a form that is even more dangerous to the environment. So at a recent meeting of the American Chemical Society scientists were told that, “Treated wastewater is one of the major sources of pharmaceuticals and antibiotics in the environment. Wastewater treatment facilities were not designed to remove these drugs. The molecules are typically very stable and do not easily get biodegraded. Instead, most just pass through the treatment facility and into the aquatic environment.” In China the overuse of antibiotics, especially in animals, and failure to remove them through standard wastewater treatment has gotten so bad that pure amoxicillin and other antibiotics come right out of the tap, into home drinking water. More than 60 different antibiotics has been found in random samples of the Yangtze and Pearl Rivers. Downstream from pharmaceutical plants in China antibiotics have been found in concentrations that are 10,000 times above normal human treatment doses. Extreme drug resistance genes have been found escaping wastewater treatment from northern China to the Rocky Mountain streams and the Hudson River alongside New York City. Antibiotic resistant bacteria hitchhike in dust plumes, and using human cargo and transport, spreading across the terrestrial world. Birds poop them, honeybees spread them and the impact on the Earth Microbiome is enormous. And so, as the United Nations General Assembly convenes on September 21 to debate measures aimed at preserving the utility of antibiotics to protect human health, I wish they would consider the well-being of the entire planet. We are tempting fate every time a person takes antibiotics mistakenly to treat a viral infection, a cow is fattened with pounds of “growth promoters,” a pool of salmon are dosed with antibiotics in aquaculture settings and the daily kilotons of human waste pour into the world’s rivers and seas. I wish the UN and the political leaders of the world would contemplate what killing off species of oxygen-producing microbes, of methane-eating bacteria or of human gut beneficial microbes will mean for the future of Earth.

### 2NC – UQ/Link

#### GMOs are blocked now, but the plan is a boon for biotech – that is all of their modeling claims.

CEO 2021 - Corporate Europe Observatory has been tracking the industry’s lobby attempts to get new GM techniques deregulated since 2015   
["Derailing EU rules on new GMOs," Mar 29, https://corporateeurope.org/en/2021/03/derailing-eu-rules-new-gmos]

For many years the biotech industry has lobbied the European Commission not to regulate products made using new GMO techniques, including ‘genome editing’ techniques such as CRISPR-Cas. Sidenote However on 25 July 2018 the European Court of Justice ruled that such genome editing procedures are GM techniques and its products must be regulated as such. Since then, industry and researchers have been pushing hard to change the EU GMO law (2001/18) in order to get genome editing deregulated (ie with no risk assessment, monitoring, or labelling).

But there are two huge hurdles to overcome. First, each decision on GMOs in the EU is highly contested, therefore it will be hard to find enough support to overhaul the EU GMO regulations. Second, and connected to the first, public support also has to be won. Therefore, wild promises are being made about the alleged benefits of crops and animals which are made using genome editing techniques, to convince the public of their value. Similar promises were also made for GMOs in the past, but never proved true.

The lobby tactics described in this briefing appear to firstly focus on legal strategy, and secondly, to develop a positive PR narrative of, for example, climate-friendly ‘flagship products’, in order to gain public acceptance for new GMOs. They are also a good example of the typical echo-chamber that comes with big industry lobby campaigns, whereby decision makers are exposed to multiple voices all bringing the same message. The lobby initiatives described in this briefing appear to be driven by public research organisations, however they have close ties to corporate interests.

#### The plan wrecks the EU’s regulatory framework.

CEO 2021 - Corporate Europe Observatory has been tracking the industry’s lobby attempts to get new GM techniques deregulated since 2015   
["Derailing EU rules on new GMOs," Mar 29, https://corporateeurope.org/en/2021/03/derailing-eu-rules-new-gmos]

Broad societal debate is essential

The biotech industry and its allies are working hard to convince and mislead the EU institutions into believing that the new generation of GMOs are so safe that they do not require regulation. They are also spinning a tale that the new GMOs will succeed where previous ones failed: in promoting a fair, socially just and ecologically sustainable agriculture. If the industrial lobby effort succeeds, then new GMOs (plants, animals, fungi and micro-organisms) will no longer undergo food and environmental safety checks, nor be monitored or labeled.

However, there are much more appropriate and innovative solutions available to make agriculture more environment- and climate-friendly, such as those developed by organic farmers and agro-ecology networks. Crucial first steps for instance include the increased use of trees in farming, more genetic diversity in crops and animals, localised production, soil and water conservation, natural pest control, lighter machines, more rotation of crops, and less intense animal rearing. This will equally enable farmers to stop being dependent on expensive seeds and polluting pesticides, as offered by Bayer, BASF, Corteva and Syngenta.

The lobby campaign described here, that largely remained under the radar, is no less than an assault on the EU’s environmental and consumer protection legislation, which contradicts the Commission’s Farm to Fork ambitions for environmentally friendly agriculture and consumer choice.

Environment and farming groups call on the EU institutions to ensure that the 2018 ECJ ruling is fully implemented, thereby keeping new GMOs covered by current safety controls and labeling rules. This topic will be high on the EU agenda in the coming months, and it is crucial that the the wider public is actively involved in this debate. The future of our food system concerns everyone.

### 2NC - Link – Unsustainable/Bad

#### Unsustainable

Ray Cooper, 21, 7-9-2021, Farmers Trapped in Unsustainable Cycle by Biotechnology, Seed Consolidation, National Sustainable Agriculture Coalition, https://sustainableagriculture.net/blog/farmers-trapped-in-unsustainable-cycle-by-biotechnology-seed-consolidation/, 6-28-2022

To remain profitable, multinational agribusiness companies must generate and maintain a constant state, or at least a general trend, of overproduction and depressed commodity prices. Input suppliers, including biotechnology and seed corporations, can sell their patented products to a client (farmers) always seeking to expand their operations. Meanwhile, on the other end of harvest season, a concentrated number of food processors are able to purchase commodities for a price driven down by excess supply.

To illustrate the relationship, the following chart demonstrates that corn yields increased rapidly during the decades that these corporations amassed profit and influence – multiplying almost 600 percent since the mid-century dawn of the age of industrial agriculture and consolidation.

It is important to acknowledge that farmers may indeed experience lucrative years and rising commodity prices, often due to increased demand from international export markets. This is an exception, however; it is not a rule. While farmers win on occasion in this system, it is always as the industry collectively spirals downward.

Farmers who seek to permanently raise the price of commodities and otherwise elevate their share of the food dollar find themselves trapped. Realistically, corn farmers have few options to cut their input costs with an industry as consolidated as seed and biotechnology. They need to purchase the genetically engineered seed designed to withstand the herbicides, pesticides, and synthetic fertilizer which they have used for many growing seasons – but use of these chemicals and additional industrial practices, including mechanical tilling, erode soil nutrients until non-GE strands may no longer be able to maintain yields. The conventional farmer is not able to simply save and replant GE seed to save input costs either, for it is protected under utility patent law.

Similar to the biotechnology and seed industry, the farm equipment sector is highly consolidated. Four companies, chief among them John Deere, control at least 45 percent of global farm machinery sales. The farmer who decides to increase their yield to make up for lost income from falling prices may purchase new, productivity enhancing technologies from these companies. Because this decision is invariably made by thousands of farmers every planting season, with everyone reasonably aiming to stabilize their bottom line, a renewed downward pressure on prices is created. “The lower prices, in turn,” according to Darryl E. Ray in a 2003 University of Tennessee report, “become further incentives to adopt more cost-reducing technologies, and prices continue their slide.”

Unless farmers are able to adopt sustainable farming practices or radically alter their business models, they will continue to rely on these patented products year after year, sending half of the checks they write to increase the balance sheets of these corporations.

John Deere’s revenue growth consistently outperforms farm incomes, even as they rise and fall together. Large equipment manufacturers even use patents to prevent farmers from repairing their own heavy machinery (which is more damaging to soil health than previously thought) using independent repair technicians, or continuing to maintain equipment that is no longer supported by the manufacturer. This multiplies the profit streams for companies and perpetuates the need for farmers to continue to invest in the newest available equipment.

The imbalance does not stop there. In recent years, these industries have been acquiring data technology companies to create programs like Monsanto’s Climate View, now owned by Bayer. Farmers who participate in the program supply harvest field data through the sensors on combines manufactured by John Deere and AgCo, which together control 70 percent of the U.S. combine industry, and receive prescriptions sent back to the combine advising farmers which Bayer products to purchase to maximize their yields.

In his recent book, Perilous Bounty, Tom Philpott recounts an interview with an ex-Monsanto executive who “painted a future in which farmers would essentially outsource their decisions to Monsanto, or at least rely on the company to narrow their choices dramatically… This could empower farmers to make better decisions,” he continued, “but the farmers’ interests and the industry’s don’t necessarily align.”

Contrary to the vision of these corporate executives, basic economics instructs that limiting supply would cause commodity prices that farmers receive to rise. The industry, however, is unable to self-correct because no platform exists for all farmers – who are in competition with one another – to agree to cut production in a given year. Even if that scaled coordination were possible, farmers might be pressured to maintain or expand production to justify past investments in heavy machinery or other inputs, and to avoid furloughing staff and laborers. Further, the design of federal crop insurance and commodity programs currently incentivize the maintenance of conventional farming models and levels of production.

Federal crop insurance and commodity programs are designed to maximize yields, directly serving the interests of multinational agribusiness corporations who profit from maintaining a state of overproduction. These subsidies enable the biggest industrial operations to get bigger at the expense of smaller producers, as benefits are siphoned to a limited number of commodity crops and a relatively small number of farmers. The artificial absence of risk for these farmers, as well as bias against alternative operations from financial lending institutions, inhibits what motivation might otherwise exist to adopt diversified production systems as a risk management strategy.

That is why agribusiness lobbyists work to preserve federal support that reduces crop insurance premiums and prevents payment limitations to commodity subsidies. This arrangement maintains the incentive for farmers to overproduce, while also enabling these agribusinesses to signal that their relationship with farmers is indeed symbiotic, rather than parasitic. In reality, however, the public benefits of commodity programs are funneling potential resources away from farms and rural communities. Currently, any farmer or landowner – even multimillionaires and billionaires not actively engaged in farming – can receive unlimited premium subsidies.

As an added consequence, these programs have been fundamental to the acceleration of rural depopulation and the consolidation of farmland. This places small and mid-sized farms, or other low-resource, beginning, and BIPOC farmers, at a competitive disadvantage when it comes to buying land. According to a study by agricultural economists from Cornell University and the University of Illinois, crop insurance contributed to a four to nine percent increase in forage and rangeland values. Another study that looked only at the impacts of direct payments eliminated by the 2014 Farm Bill, found that those payments caused an increase of about $18 per acre in cropland value.

To demonstrate one facet of the impacts of farmland consolidation, 40 percent of farmland in the United States was rented from landowners in 2017. Farmers who do not own but only rent farmland are, sensibly, wary against sinking heavy investments into land which they may be asked to leave at the end of any contract period. This particularly affects small and mid-sized, BIPOC, and beginning farmers who do not have the resources to purchase land at inflated prices. This effectively traps the next generation of farmers and would-be innovators, limiting them to adhere to conventional and unsustainable practices supported by existing farm infrastructure, or only modest and transferable investments.

#### Impact on BIPOC farmers

Ray Cooper, 21, 7-9-2021, Farmers Trapped in Unsustainable Cycle by Biotechnology, Seed Consolidation, National Sustainable Agriculture Coalition, https://sustainableagriculture.net/blog/farmers-trapped-in-unsustainable-cycle-by-biotechnology-seed-consolidation/, 6-28-2022

To many, the advent of the modern seed and biotechnology industry represents the pinnacle of benevolent ingenuity for our food system.

There are certainly conversations to have about the role genetically engineered crops play in increasing yields and boosting productivity of agricultural land per-acre through the reduction of crop loss. However, just as important but less present in mainstream conversations is a frank consideration about whether those gains can be justified given the adverse, long-term impacts that conventional farming has on people, animals, and the land.

When these conversations are better informed by the growing number of studies which point to the benefits of sustainable farming models, as well as its scaleable potential, we are compelled to ask: “Is the status quo worth defending?”

It could be, if the power imbalance between farmers, rural communities, and multinational corporations did not breed adverse consequences for the former. Recall that seed was once treated as public property and openly shared – not only in the 1800s, but for millennia on this continent by Indigenous people. In addition, integrated crop-livestock systems kept pests and weeds at bay while limiting soil disturbance to preserve the microbial community and prevent erosion, among other restorative benefits for soil health. No rising input costs or potentially dangerous chemicals were necessary, unlike today.

In 2019, U.S. farmers spent $118 billion to purchase seed and plants, fertilizers, animal feed, and agricultural chemicals. The cost of total farm input expenditures has increased almost $80 billion since 2009, a classic symptom of an industry that has become too concentrated. Bayer, Corteva, Limagrain, Chem-China, and BASF exclude competitors with control of at least 50 percent of the seed and agrochemicals markets by raising the price of inputs for farmers (including with a novel “technology fee”) without risking their own market dominance.

To strictly analyze the cost of seed, consider that corn farmers who paid $26.65 per planted acre of seed in 1990 paid $93.48 in 2019. This represents a dramatic increase of roughly 350 percent, beyond the rate of inflation, following the biotechnology merger-mania and the co-opting of the seed industry.

Health and human consequences compound this financial loss, with all such liabilities externalized by multinational corporations and placed upon farmers and consumers. In 2015, the International Agency for Research on Cancer classified the active ingredient in Bayer’s Roundup, glyphosate, as “probably carcinogenic to humans.” Farmers and farmworkers in proximity to glyphosate are potentially at-risk, as are consumers who consume GE food with glyphosate residue. Though glyphosate has since been banned or limited in dozens of countries, the Environmental Protection Agency re-approved Roundup to be used in the United States last year – even as lawsuits from 46,800 plaintiffs alleged personal injury from exposure to Bayer’s glyphosate-based products.

Bayer insisted that they would “defend the safety of glyphosate… vigorously.” Then, in February 2021 Bayer announced a $2 billion settlement to cover claims from individuals who developed cancer after being exposed to Roundup. This settlement, reached in private arbitration, is not an admission of guilt. Roundup not only remains on the market but is still the weedkiller favored by farmers. What else would conventional farmers use with their Roundup Ready seed?

Genetically engineered seed has indeed taken over. The Food and Drug Administration (FDA) reports that GE soybeans comprise a stunning 94 percent of all soybeans planted in the United States, GE cotton accounts for 94 percent of all cotton planted, and 92 percent of corn planted was GE corn. The multinational corporations that produce and market these GE seed varieties do not only place their products on the market but remove non-GE varieties of seed inherited from acquired seed companies. The result has been an alarming reduction in farmer choice – despite the illusion of many unique seed brands – as well as the decimation of crop biodiversity.

In 1983, a report by the Rural Advancement Foundation International (RAFI-USA) revealed that the United States lost 93 percent of its agricultural genetic diversity in the twentieth century. That was before the consolidation of the seed and biotechnology industries in the mid-1990s, and nationally the trend has continued. This genetic uniformity poses a significant threat to the U.S. food supply. The more that the agriculture sector relies on a few uniform, patented seed varieties, the more susceptible these conventional farms become to epidemic pathogens or unexpected climate events. (We saw what happened during the Dust Bowl when traditional foodways were replaced with industrial, monocrop farming.)

Rather than elevating the long-term resilience and security of our food system, a 2019 AGree report notes that “the tendency for farmers to specialize production to only a few commodities presents risks in the event of any type of shock (e.g., extreme weather, disease or pest outbreaks, price cycles, market fluctuations, etc.).”

### AT: Europe Won’t Shift

#### Europe wants more GMOs

Linnekin 22 [Baylen Linnekin, Senior Fellow, food lawyer, scholar, and adjunct law professor, 5-21-2022, “Britain Finally Relaxes GMO Rules, but Advocates Want More Deregulation”, Reason, https://reason.com/2022/05/21/britain-finally-relaxes-gmo-rules-but-advocates-want-more-deregulation/, 6-28-2022]

The decision by the U.K. Parliament to relax rules around the planting of some genetically modified crops in Britain is being celebrated this week in an excellent Observer editorial published by sister publication The Guardian. (The papers share an owner.)

"In an overpopulated, overheated world that desperately needs secure food supplies and to limit emissions of carbon dioxide, [anti-GMO] barriers should no longer be allowed to restrict progress," the editors write. "We urgently need solutions and Britain, one of the world's leaders in animal and plant research, must be free to play a key role in this agricultural revolution. Blanket bans of genetically altered crops and animals can be countenanced no longer."

In the works at least since Brexit, Britain warming toward GMOs comes at a key moment, with the island facing record food prices due to inflation, lingering supply-chain issues related to COVID-19, and knock-on effects from Russia's invasion of Ukraine.

Britain's deregulatory plans around GMO crops focus on gene editing, a type of genetic modification that "is heavily restricted in the EU." Indeed, current European Union rules "make gene editing for crops and livestock almost impossible."

Britain's embrace of gene editing in agriculture places more post-Brexit distance between it and the E.U. That's intentional. Indeed, the British government this week couched its GMO plans as part of its overall goal to "deliver on the promise of Brexit."

It's also a good thing. As I explained in a 2019 column, the E.U.'s anti-GMO rules are ridiculously bad. Last year, seeking to begin to shed those rules, the British government announced it would eliminate "existing costs and red tape" to allow field trials of gene-edited crops. The change is part of a plan to "allow far greater use of gene editing in crops in the UK, and a redefinition in law of genetic modification." Environment Secretary George Eustice said the plan is intended to tackle a host of issues, including "food security, climate change[,] and biodiversity loss."

More details about the plans were revealed recently in the annual Queen's Speech. Those plans include "considering the next steps in enabling gene-edited plants and plant products to be brought to market." The proposals were welcomed by farming and crop-science advocates. Leading British scientists have also hailed the plans as "great news," "very welcome," and "pro-innovation."

Gene editing is most commonly associated with CRISPR, which boasts "the potential to be a pivotal innovation in the drive to feed the current and growing world population." CRISPR technology "uses a process known as mutagenesis—turning on or off specific DNA that's present naturally in an organism," I explained several years ago. On the other hand, "GMO crops are produced by genetic modification, also known as transgenesis, which involves inserting DNA from one organism into another."

It is the former, rather than the latter, that Britain is moving to allow. That has some critics questioning the scope of regulatory reform and pace of scientific progress. For example, while hailing the loosening of restrictions, the Observer editorial also noted the scope of reform is narrow and "unsatisfactory." They urge Britain to overcome its "misguided government thinking" and allow the introduction of other GMO crops and foods—not just those created by gene editing.

#### EU loosens gmo regs

**Blenkinsop 21** [Philip Blenkinsop, Chief Correspondent specializing in EU affairs, 4-29-2021, “EU calls for rethink of GMO rules for gene-edited crops”, Reuters, https://www.reuters.com/world/europe/eu-calls-rethink-gmo-rules-gene-edited-crops-2021-04-29/, 6-28-2022]

BRUSSELS, April 29 (Reuters) - The European Commission launched a review of EU rules on genetically modified organisms (GMOs) on Thursday, opening the door to a possible loosening of restrictions for plants resulting from gene-editing technology.

Prompted by a 2018 ruling from the European Union's top court that techniques to alter the genome of an organism should be governed by existing EU rules on GMOs, the Commission concluded that its 2001 legislation was "not fit for purpose".

Gene-editing technology targets specific genes within an organism to promote certain characteristics or curb others, while genetic modification involves transferring a gene from one kind of organism to another.

GMOs are rarely used for cultivation in the EU due to longstanding fears of their environmental effects and some campaign groups say gene-editing brings similar risks.

### 2NC – Laundry List

#### Folx pls gmos are literally so bad

**Slow Food International No Date** [ “Why We are Against GMOs”, Slow Food International, <https://www.slowfood.com/what-we-do/themes/gmos/why-we-are-against-gmos/>, accessed 6-28-2022]

Biodiversity

Where they are grown, GM crops occupy large surface areas and are linked to intensive monoculture systems that wipe out other crop and ecosystems. Growing only one kind of corn for human consumption will mean a reduction in flavors, traditional knowledge and food security.

Toxic Crops, Toxic Land

Most GM crops fall into one of two categories: either engineered to resist chemical herbicides, or engineered to produce insecticides themselves. When herbicides are used on resistant crops, over time the weeds develop resistance, leading to the use of even more chemicals. Crops engineered to produce insecticides on the other hand produce toxins that are not only harmful to pests but other insects such as butterflies, moths and insect pollinators.

Corporate Control

GM crops are patented, which allows a few multinational companies such as Monsanto, Bayer, Syngenta, DuPont and Dow to control the entire GM food chain – from research to breeding to commercialization of seeds. The multinational companies that patent and produce GMO seeds control the majority of the seed market and often also produce herbicides and fertilizers. Patenting genetic material has shifted the balance of economic power towards big business in their aggressive pursuit of profit.

Threat to Small-Scale Farmers

GM crops denature the role of farmers, who have always improved and selected their own seeds. GM seeds are owned by multinationals to whom the farmer must turn every new season, because, like all commercial hybrids, second-generation GMOs do not give good results. It is also forbidden for farmers to try to improve the variety without paying expensive royalties.

Furthermore, farmers risk being sued by big corporations if their crops are accidentally contaminated with patented GM crops. Pollen from crops like oilseed rape is easily spread via wind and insects to neighboring fields. Hundreds of these farmers in the US have been sued by Monsanto, Syngenta, BASF and DuPont for illegally growing patented crops.

The role of small-scale agriculture in food sovereignty and security, protection of local areas and economies, the preservation of landscape and the sustainability is becoming increasingly clear to consumers, governments and scientists. Governments should support these productions instead of heeding to the demands of big business.

Food Culture

GM products do not have historical or cultural links to a local area. In Italy for example, a significant part of its agricultural and food economy is based upon identity and the variety of local products. Introducing anonymous products with no history would weaken a system that also has close links to the tourism industry.

Health and Safety

Little is understood yet about the health effects of GMOs, but recent studies have shown animals fed with GM-containing feed can develop health problems. In many parts of the world including the EU, studies on GM crops can be carried out by the same companies who product them, casting doubt on the quality and bias of data.

Hunger

Multinationals promise that GMOs will feed the world, but since they began to be marketed two decades ago, the number of starving people in the world has only grown, just like the profits of the companies that produce the seeds. In countries like Argentina and Brazil, GM soy has swept away energy-providing crops like potatoes, corn, wheat and millet on which the daily diet is based. The majority of GMO crops are not destined to human food, but rather for animal feed, textiles and biofuels. GMOs have not increased productivity: data from the USA’s Department of Agriculture shows that there has been no recorded increase in soya and corn yields since the introduction of GMOs.

Continued industry promises about the ability of GM crops to tackle the world’s growing social problems are a myth: They have reduced biodiversity, polluted landscapes, threatened the future of small-scale farming and reduced the food security of the world’s poorest people. They have not fed the world, but rather concentrated profits and power into the hands of a few ruthless companies. It’s time to stop the big scam.

### 2NC – Yes ABR

#### Biotech cant solve Antibiotic resistance, kills millions

**Bayer 22** [Max Bayer, staff writer for Fierce Biotech, 2-15-2022, “Biotech pipeline is outpaced by antibacterial resistance”, Fierce Biotech, <https://www.fiercebiotech.com/biotech/new-report-finds-lackluster-investments-antibiotics-industry-resistance-threats-loom>, accessed 6-29-2022]

“The breadth and novelty of the antibacterial clinical-stage pipeline is insufficient to meet the ongoing threat of wide-spread infection from drug-resistant strains,” the report concluded.

Venture funding has lagged significantly for companies working on antibiotics compared to the larger biotech industry. Co-authors David Thomas and Chad Wessel, who lead the trade group’s industry research, found that from 2016-20, venture funding for antimicrobial ucompanies increased 29% compared to the five years prior, while funding for the biotech industry as a whole increased 175%.

For example, the study found 109 companies with assets focused in oncology raised $12 billion in the 10-year span ending 2020, compared to $700 million for just 12 biotechs working on antibacterials.

The authors say the lack of investment has created a pipeline that is not diverse enough, emblematic in the fact that only 18% of antibiotics approvals have occurred this century.

Of the 64 antibacterial treatments currently in clinical trials, more than 84% are for direct-acting novel chemical or biochemical entities. But almost two-thirds of those have targets for which there’s already a marketed drug.

Some of the drugs in development include China-based biotech Sinovent's XNW4107, which is being tested in with common antibacterials imipenem and cilastatin to treat infections from resistant bacteria. Another, Adaptive Phage Therapeutics, has a number of therapies in phase 1/2 trials for prosthetic joint infection, recurring urinary tract infection and more.

Biotech is an industry where innovation is buoyed by startups. More than 80% of the new antibiotic drugs being tested come from small companies, with large companies accounting for only eight of them. The authors worry that large pharmaceutical companies exiting the antibacterial market, coupled with a lack of licensing deals and M&A activity, has scared off investors.

Struggling antibiotics developer Entasis Therapeutics disclosed earlier this month it was fielding offers for a buyout at $1.80 per share. The share price hasn’t jumped above $4 in almost two years after the company’s IPO was priced at $15 per share.

The race for new treatments (or lack thereof) underscores the swift pace at which antibiotics are overcoming existing treatments. In a study published last month, a global team of researchers funded by the Bill and Melinda Gates Foundation and the Wellcome Trust estimated that more than 1.2 million deaths in 2019 were attributed to bacterial antimicrobial resistance. Nearly three-quarters of estimated attributable deaths were due to six pathogens, with E. coli leading mortality.

In 2020, tuberculosis was the second-highest infectious disease killer with roughly 10 million infected, behind COVID-19.

Despite the lack of investment, regulators are eager to approve new antibiotics. The authors calculated the rate of investigational new drug applications for antibiotics resulting in FDA approval was 7.9% over a 10-year span ending 2020. That's about twice the success rate compared to all other diseases reviewed by the agency. For antibacterial new chemical entities, the rate was 16.3%.

#### Gmos cause antibacterial resistance

**No Author 10** [“Genetically Modified Foods: The Consequences of Agricultural Design.”, Dartmouth Undergraduate Journal of Science, 3-21-2010, <https://sites.dartmouth.edu/dujs/2010/03/24/genetically-modified-foods-the-consequences-of-agricultural-design/>, accessed 6-29-2022]

Fear of gene transfer is also prominent in the debate surrounding GM foods. When making new genes, antibiotic resistance is coupled with the new genes since gene transfer is only successful in a few cells and a marker is needed to identify successful transfers. The antibiotic resistant cells are selected for further breeding and the resistance stays with the new gene and is incorporated into the crop. The fear of gene transfer comes from the potential of the genes from the GM foods to be taken up by bacteria in the gut during gestation (6). The fact that the new gene can and may interact with existing genes must be taken seriously. If bacteria carrying antibiotic resistance genes cause infection, they can be very difficult for doctors to treat (6). As a precautionary measure, some experts say that antibiotic resistance genes should not be used (6). A gene transfer could also result in the new gene deactivating an existing gene, with dramatic consequences for human health.

The environmental risks involved with GM crops are numerous. They include the GMO’s capability to escape and potentially introduce the engineered genes into wild populations, the persistence of the gene after the GMO has been harvested, the susceptibility of non-target organisms (e.g. insects which are not pests) to the gene product, the stability of the gene, the reduction in the spectrum of other plants including loss of biodiversity, and the increased use of chemicals in agriculture (3). The overall outstanding risk is the potential decrease in the biodiversity of crops and their associated insects and animals, shifting the forces of natural selection through direct human intervention. The arms race that now exists between natural species and the chemicals that we spray upon them hold the potential to give rise to newer super-species that we may one day lose control of.

#### Antibiotic Resistance bad for population, economy, and health care

Ventola 15 [C. Lee Ventola, Masters of Science, April 2015, “The Antibiotic Resistance Crisis. Part 1: Causes and Threats”, PubMed Central, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4378521/>, accessed 6-28-2022]

Antibiotic-resistant infections are a substantial health and economic burden to the U.S. health care system, as well as to patients and their families.1 They commonly occur in hospitals, due to the clustering of highly vulnerable patients, extensive use of invasive procedures, and high rates of antibiotic use in this setting.1 Nearly two million Americans per year develop HAIs, resulting in 99,000 deaths, most due to antibacterial-resistant pathogens.1 In 2006, two common HAIs (sepsis and pneumonia) were found to be responsible for the deaths of nearly 50,000 Americans and cost the U.S. health care system more than $8 billion.1

Antibiotic-resistant infections add considerable costs to the nation’s already overburdened health care system. When first-line and then second-line antibiotic treatment options are limited or unavailable, health care professionals may be forced to use antibiotics that are more toxic to the patient and frequently more expensive.5,11 Even when effective treatments exist, data show that in most cases patients with resistant infections require significantly longer hospital stays, more doctors visits, and lengthier recuperations and experience a higher incidence of long-term disability.5 The duration of hospital stays for patients with antibiotic-resistant infections was found to be prolonged by 6.4 to 12.7 days, collectively adding an extra eight million hospital days.1

Estimates regarding the medical cost per patient with an antibiotic-resistant infection range from $18,588 to $29,069.1,14 The total economic burden placed on the U.S. economy by antibiotic-resistant infections has been estimated to be as high as $20 billion in health care costs and $35 billion a year in lost productivity.1 Antibiotic-resistant infections also burden families and communities due to lost wages and health care costs.

#### Greatest existential risk

O’Neil 16[Lord Jim O'Neill, the former chief economist for Goldman Sachs - the United Kingdom's commercial secretary to the Treasury and led the government's Review on Antimicrobial Resistance, Summer 2016, “The Global Threat of Antimicrobial Resistance”, Pew Trusts, <https://www.pewtrusts.org/en/trend/archive/summer-2016/the-global-threat-of-antimicrobial-resistance>, accessed 6-28-2022]

According to the World Health Organization (WHO), resistance to antibiotics and other types of antimicrobials is growing and represents the single greatest challenge in infectious diseases today. The WHO reported nearly half a million new cases of multidrug-resistant tuberculosis across 100 countries in 2013, amounting to more than 20 percent of previously treatable tuberculosis cases now being resistant to multiple drugs. In the United States, the Centers for Disease Control and Prevention estimates that each year, at least 2 million people become infected with bacteria that are resistant to antibiotics, and at least 23,000 of them die. This inflicts a direct cost of $20 billion on the U.S. health care system. In the agricultural sector, U.S. Food and Drug Administration sales data showed that drugmakers sold more than 20 million pounds of medically important antibiotics for use in food-producing animals in 2014—23 percent more than in 2009—the most ever reported and more than twice the amount of antibiotics sold to treat people.

This is a global health crisis that knows no borders. Left unchecked, antimicrobial resistance (AMR) will touch all people, regardless of their nationality or their country’s level of development. It will dangerously undermine health care as we know it, making common procedures such as cancer chemotherapy or cesarean section births—which depend on effective antibiotics to reduce their risks—far more dangerous than they are today. Indeed, by 2050, 10 million people a year could be dying as a result of AMR, up from around 700,000 today, with China and India each being home to about 1 million affected patients. And by then, an estimated $100 trillion in global GDP will have been lost.

Just as infections travel with the people who carry them, so does resistance, so solving AMR is a shared responsibility. AMR is one of the biggest health threats facing the world, but it is not beyond the world’s ability to meet and conquer it, both economically and scientifically. The global community must act together, and quickly, to address the problem.

### Impact - ABR

#### Antibiotic resistance causes mass death – cascading effects on treatment kill millions

Kwon and Powederly 21 –  assistant professor in the Division of Infectious Diseases in the Department of Medicine at the Washington University School of Medicine; professor in the Division of Infectious Diseases in the Department of Medicine at the Washington University School of Medicine [Jenny H., William G. “The post-antibiotic era is here.” Science, vol 373, issue 6554. 7/30/2021.]

Imagine a world where routine surgery or chemotherapy is considered too dangerous because there are no drugs to prevent or treat bacterial infections. Unless researchers develop new antibiotics and therapeutics, the decimation of modern medicine will soon become a reality. Scientists have long recognized that much stronger incentives for research and development are needed to avoid this scenario. Yet, the rise of “superbugs” has continued, making a pandemic of antibiotic resistance a major threat to global health. One could blame slowed action against antimicrobial resistance (AMR) on an upstaging by COVID-19. Health and industry sectors deferred prepandemic AMR work to focus on tracking and preventing severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission. Worldwide, scientists pivoted toward SARS-CoV-2 research. This “all hands on deck” response was prudent but likely affected the already lagging progress on battling AMR. What about efforts before COVID-19? Prepandemic, experts noted that drug-resistant infections could, annually, kill 10 million people worldwide by 2050, and by 2030, AMR could force up to 24 million people into extreme poverty. Reports from the United Nations, the World Health Organization, and the UK and US governments promoted renewed public health and research programs, including targeted funding through the US National Institutes of Health and the Biomedical Advanced Research and Development Authority, to develop new drugs. Sadly, according to a March 2021 report by The Pew Charitable Trusts, there are only 43 new antibiotics in development. Of these, 13 are in phase 3 clinical trials, and only about half of these might be approved. It's no secret that the major problem is the lack of private-sector interest in bringing novel antimicrobial therapies through development. The war against AMR requires innovation, which is costly. It typically takes 10 to 15 years to develop an antibiotic through regulatory approval. According to the Pew report, among the 38 companies working on AMR, only two rank among the top 50 pharmaceutical companies (by sales). And only about one in four developments represents a novel drug class or a mechanism of action. We need new pharmaceutical targets to combat microbial virulence, new methods to inhibit the genetic transfer of antibiotic resistance between bacteria, new drugs that bolster host immunity against AMR, and microbiota-based therapies. To better track AMR, next-generation diagnostics are needed that use whole-genome and metagenomic sequencing and molecular techniques to detect AMR organisms in humans, animals, and the environment. Prior to 2020, the United States started paying attention to market-place incentives that would rekindle private investment. In 2013, the US Centers for Disease Control and Prevention (CDC) released its first Antibiotics Resistance Threats report, which prompted a National Action Plan for Combating Antibiotic-Resistant Bacteria in 2015. Fortunately, last October, the strategy was renewed for 5 years, directing federal agencies to spur new drug development. Also, the Pioneering Antimicrobial Subscriptions to End Upsurging Resistance (PASTEUR) Act was reintroduced in Congress last month. If the bipartisan bill passes, it will support a funding model that is not linked to sales, among other economic incentives. Although the White House's fiscal year 2022 budget plan leaves gaps in resources to address AMR, increases in health security budgets could be directed at incentivizing drug development. Given that the CDC's 2019 Antibiotic Resistance Threats report indicated that 2.8 million Americans acquire infections caused by AMR bacteria each year (with more than 35,000 resulting deaths), the government must do more to encourage private-sector interest. COVID-19 has shown that it is possible to create robust public-private partnerships across research, industry, and public health that accelerate research and clinical trials and spur proactive regulation in the context of a global public health threat. Collaborative action is equally necessary to battle AMR. The Combating Antibiotic-Resistant Bacteria Biopharmaceutical Accelerator, a global public-private partnership established in 2016, committed $500 million, through 2022, to support the development of new antibiotics and rapid diagnostics to tackle AMR. We need many more such creative partnerships. The scientific community should leverage lessons learned from COVID-19 to unite academia, industry, government, and policy-makers toward preserving the benefits of modern medicine. Continued procrastination will only lead to countless lives lost to AMR.

### Impact – Soil

#### GMOs destroy food security – increase pesticide dependence, proliferate ‘super-weeds’ and drain valuable resources

Soil Association 20 British baised charity organization that campaigns against intensive farming and emphasized local production [“Stop Genetic Modification.” The Soil Association. Nov 2020]

The GM industry has been promising for decades that genetically modified crops will revolutionise farming, and even solve world hunger. But none of their promises have come to fruition. There is little if anything to suggest the ‘next generation’ GM technology will be any different. Meanwhile, GM remains a distraction from the critical issues facing food and farming that can’t simply be solved by tweaking genes. What does GM really look like? Nearly all commercially released GM crops are produced by three chemical companies: Monsanto, Syngenta, and Bayer. Despite the pro-GM lobby’s promises that these products would lead to decreased pesticide use, the truth has proven to be quite the opposite: The use of Monsanto’s glyphosate-based weedkiller, Round-up, has skyrocketed since the introduction of glyphosate-resistant GM crops, becoming the most used weed-killer in the world. The blanket spraying of these weedkillers on GM crops is associated with environmental damage in North and South America, from degraded soils to the loss of food plants for wildlife such as the iconic Monarch butterfly. And these crops create herbicide-resistant ‘superweeds’, trapping farmers into an increasingly expensive arms race where the only winners are the chemical companies. There is also a long history of these GM crops contaminating other farms, which can be financially disastrous and poses a huge problem for organic farmers. At present, there are no commercial GM crops grown in the United Kingdom But we are still supporting these GM systems by importing them for much of our animal feed. If you buy: non-organic eggs, milk, yoghurt, cheese, meat or farmed fish from UK supermarkets, the chances are the animals behind those products were fed GM feed. We need a shift in priority to food security “GM is a huge distraction. It is diverting a massive amount of time, effort and attention from the really crucial issues facing food and farming - like looking after our soils. We have already degraded 25 to 40% of soils worldwide and unless we work very hard to reverse this damage, it will be impossible to feed the growing population healthily. GM is dangerous because it allows us to accelerate in the wrong direction for a short while longer.” Helen Browning, Soil Association Chief Executive We need to see a shift in priority to solving our underlying food problems. Techno-fixes like gene editing mustn’t distract from this. We need to: regenerate soils, diversify crops, use fewer chemicals, bring back wildlife and switch to foods that are better for us and the planet. This needs a dramatic shift towards farmer-led innovation and agroecology to create a climate and nature friendly future. Currently farmer-led research sees less than 1% of public research and development funding. Find out what our asks to the Government are around this and others here.

#### Extinction

Globe and Mail 7 John Allemang, feature writer, “Planet Earth has a dirty little secret”, May 12, Lexis Nexis

Dirt is disappearing, and **when it goes, we go.** It's a simple fact that we're using up our finite supply of good soil faster than it can be made, and whatever our eyes choose to tell us, **a crisis is looming**. Of course, like so much else about dirt, even **its do-or-die** crisis manages to be barely perceptible. In a world prepared to welcome the inconvenient truths of environmental degradation, and even make them the markers of intellectual fashion, poor old untrendy dirt somehow falls to the bottom of the global to-do list. Air pollution, water contamination, the limited lifespan of fossil fuels, the urgent need to confront climate change no matter how far away its worst threats may be - we get it, whatever don't-worry governments and vested interests like to pretend to the contrary¶ But erosion as the ultimate catastrophe, the dusty death blow? Somehow it's hard to feel apocalyptic about something you buy at a garden centre, scrape off your boots before walking through the door or scrub off your lettuce before the salad can be made.¶ "We take it for granted," agrees David R. Montgomery - which is a pretty hard admission for a man who has made it his goal to alert a distracted world to the crisis of lost soil.¶ To his practised eyes, at least, the best part of the Earth is eroding and the danger signs are everywhere: bare plowed soil carried off by wind or rain, rivers choked by sediment from clear-cut forests, over-irrigated fields turned into salt-contaminated deserts, huge unprotected tracts of wheat or corn dependent on chemical fertilizer to replace the nutrients corporate agriculture discards, the constant stripping of topsoil to create new suburbias. Our complacency is so instinctive, our wastefulness so extreme, that Dr. Montgomery has come up with a disturbing new name for modern agriculture: soil mining.¶ "We only have a fixed amount of soil - and we're digging it up," he says.¶ Dr. Montgomery is a geomorphologist at the University of Washington in Seattle, a well-travelled and well-read monitor of Earth's thin skin who knows that a civilization's lifespan depends on how it treats - or mistreats - its dirt. As a student of the Earth's eons of slow but certain transformations, he is trained to spot the big-picture inevitabilities the rest of us miss, and of this he is certain: "We're on track to lose most of our agricultural soils. And even if we solve the water crisis and the climate crisis, if we don't conserve soil, then that will do us in."¶ You hear that, and you look around at the lushness of life in the spring, and the doomsday scenario seems unconvincing. Dirt is everywhere, the fields are full of crops, the supermarket shelves have their usual cornucopia look of gross overabundance and, if there's a famine in a far-off place, as there always is, can it really all come down to a few inches of topsoil that has gone missing?¶ Yes is the short answer, according to Dr. Montgomery's wide-ranging new book, Dirt: The Erosion of Civilizations, which is to be published this week and has been deemed "a compelling manifesto" by New Scientist magazine. He takes pains to demonstrate the key role played by soil degradation in almost every civilization that once claimed to dominate the Earth - a useful antidote to the Golden Age nostalgia for a more harmonious past that afflicts many in the environmental movement. Wrecking soil, he implies, is something humans do, given the opportunity, because we're programmed to think of immediate issues such as personal survival rather than forgoing our inheritance to benefit the farmers of the future. And one reason we can do this with a clear conscience is our belief that soil is everywhere.¶ "People just don't realize that not all soils are good agricultural soils," Dr. Montgomery says. "And even with good soils, the pace at which it's being lost is slow by human standards even if it's quite rapid by geologic standards."¶ You don't have to be a geologist to spot the problem. At least since the Dust Bowl crisis of the Depression era, when much of North America was blanketed by thick clouds of soil eroded off the drought-ridden prairie, soil specialists have put forward strong arguments for conservation - arguments that are all the more crucial since the western plains, as Dr. Montgomery observes, "are one of the few places on the planet that can produce agricultural surpluses and feed the world."¶ In the Canadian West, a combination of high winds, heavy rains and years of drought has compromised the region's high-quality soil (a gift of the glacier action that collected and conveyed soil from the now-rocky Canadian North). To reduce erosion, soil advocates try to persuade farmers to cut down or even cut out the tilling (plowing) of the loose, granular soil, maintain grassy ground cover, practise crop rotation, reduce chemical fertilizer and pesticide use while making better use of manure, introduce windbreaks and work the land along more natural contours.¶ As the price of oil has climbed, making it much more expensive to operate heavy farm machinery on a vast scale and spread fertilizer extravagantly, the more sustainable approach to agriculture is gaining converts in the West. No-till farming, in particular, has gone from being a wacky agrarian fantasy to being a widely accepted practice for those who want to maintain the industrial scale of agriculture while conserving the soil by disturbing it less. "Canada is leading the way on no-till," Dr. Montgomery says, approvingly.¶ Concern about soil isn't confined to the wide-open wheat fields: In tiny Prince Edward Island, the potato industry faced bad publicity over the harmful effects of soil runoff, and a provincial act now mandates crop rotation (although critics point out that the government still permits a hefty annual erosion rate of three tons of soil per acre). The island's fine sandy loam has been identified as having huge potential for erosion due to the heavy summer rains that wash away exposed soil from vulnerable potato fields. Even to those who see dirt as inexhaustible, all that runoff is a problem: In a province where aquaculture is a major business as well as a way of life, pesticides and fertilizer nutrients from eroded soil quickly upset the delicate environmental balance.

#### GMOs alter the soil ecosystem – introduce foreign genes that effect species diversity and soil quality

Guan et al 16 – researcher in the Department of Life Sciences, Yuncheng University, Yuncheng, [Zheng-jun; Shun-bao, Luc; Yan-lin, Huo; Zheng-Ping, Guan, Biao Liu, WeiWei. “Do genetically modified plants affect adversely on soil microbial communities?” ScienceDirect. 3/15/16.]

Soil microorganisms play essential roles in agricultural production systems. With the increase in cultivation of various GM plants (e.g., insect-resistant or disease-resistant plants), soil microorganisms will be exposed to risks that may eventually adversely affect agricultural production systems. The introduction of foreign genes into GM plants may affect species diversity and amounts of root exudates, alter micro-ecological environments in the soil, and can strongly influence the soil ecosystem functions. Therefore, the core effect of growing GM plants on a soil is the change in soil ecosystem function, especially the effects on the related microbial communities. Some investigators believe that no inherent connection exists between the diversity and function, and the abundance of the species was found to not affect soil function substantially (Bardgett, 2002). There is no direct evidence showing that soil microbial diversity is related to soil ecosystem function. That is, a decrease in microbial diversity does not necessarily worsen soil ecosystem function, but the change in certain key species may matter (Tilman et al., 2001). On the other hand, Bender et al. (2016) synthesized the potential of soil organisms to enhance ecosystem service delivery and demonstrated that soil biodiversity promotes multiple ecosystem functions simultaneously (i.e., ecosystem multifunctionality). Current techniques and methods may not be effective enough to obtain the relevant evidence, or the available data may be inadequate to draw such conclusions. For example, soil ecosystem function may have correlations only with a few microbial species or show functional redundancy (Loreau et al., 2001). Nevertheless, the species abundance and diversity of soil microbes comprise an important reference parameter in the system of safety evaluation for GM plants and may represent a key element of the biosafety assessment of animal and plant diversity.

### Impact - Food

#### Soil destruction decimates food security – lowers production, raises prices, and causes cascading insecurity

Pozza and Field 20 – Research Associate at the the University of Sydney Institute of Agriculture and School of Life and Environmental Sciences; Professor of Global Soil Security & Soil Science Education at the Unviersity of Sydeny [Liana E.; Damien, J. “The Science of Soil Secuirty and Food Security” ScienceDirect. 11/11/2020.]

Without secure soil, nutritious food will be much harder to produce into the foreseeable future, and how we access food influences the relationship individuals and communities have with the soil. To visually demonstrate this, it is possible to map the relationship between Food and Nutrition security and Soil Security, in line with a subset of the UN Sustainable Development Goals (Fig. 4).

Fig 4 ommited

Fig. 4. Soil Security and the nexus between global existential challenges and UN sustainable development goals. SDGs highlighted in blue refer to goals common to both Soil Security and Food Security.

The realisation of Sustainable Development Goals (UN General Assembly, 2015) has been a major step in placing the importance of soil care on the international agenda. Soil directly relates to seven of the goals, with the remainder indirectly related through the contribution of soil to ecosystem services (Keesstra et al., 2016). Those indicated by blue boxes within Fig. 4 are goals which are related to both soil and food, and thus highlight areas in which interactions between Soil Security and Food and Nutrition Security lie. In this section we delve deeper into such interactions which provide the basis of addressing key issues.

Natural factors such as climatic and environmental systems, and anthropogenic factors such as socioeconomic and political systems affect the interaction between Food Security and Soil Security; the perceived strength of these interactions are identified in Table 1. Degree of interaction was based upon intensity of literature findings and how the different dimensions are discussed. For example, a paper discussing soil salinity and cropping is strongly related because food availability is heavily dependent upon the condition of the soil. If interactions were strong, they were denoted with an Asterix. Under each of the Food and Nutrition security dimensions we discuss systematically the interaction with Soil Security dimensions.

Table 1. omitted

5.1. Availability

Food production and forecasting is dependent upon understanding the capability (moderate interaction, Table 1) of the soil to support certain agricultural systems and functions. If the soil is unable to support production, human intervention is often used to overcome this, for example through irrigation, the addition of fertiliser, or application of soil amendments. To reduce the need for human intervention and inputs over time, agricultural uses for the soil, where possible, should be tailored to the soil type, or its capability, based upon what the soil is able to support, rather than the other way around. This may sometimes be easier said than done, as land use or management decisions may be politically motivated or driven by commodification, often overriding best land management practices. To achieve a shift is possible but will require a concerted effort from all levels who derive their wealth from the land – be it individuals, organisations, or government.

Land suitability assessment is a useful approach to ensure the soil is suited to its intended use, but the soil may be suitable for multiple production systems, potentially leading to competition between the different production systems – a common dilemma today (Tilman et al., 2009). A possible way to help inform policy and reduce the chance of conflicting interests is by mapping of land versatility (Kidd et al., 2015), which is influenced by the capability and condition of the soil. To ensure fair decisions on land management and prevent negatively impacting upon the soil, cooperation and communication is required between all stakeholders to develop fair policy and support those working on and living off the land.

As identified in the review of Food Security publications earlier, production of food for the rapidly growing population is partially addressed by a move towards agricultural intensification. This intensification is possible by increased application of synthetic fertilisers and pesticides, and the selection of higher-yielding crop varieties, often grown as a monoculture (Matson et al., 1997). The consequence in some areas has been the decline in the soils condition (strong interaction, Table 1), including loss of soil structure, erosion, nutrient depletion and loss of biodiversity in the soil (Tsiafouli et al., 2015). Decline in soil condition in turn impacts upon agricultural productivity and diminishes natural ecosystem services the landscape provides (Squire et al., 2015). To maintain ecosystem services and the condition of the soil, rather than focussing on a single system, a broader landscape approach is needed to allow for multiple systems and crops to coexist on the land and preserve the condition of the soil (Lal, 2020; Landis, 2017; Pretty et al., 2018).

The value of land is based on relative land prices, the production potential and/or land evaluation approaches. Land evaluation and natural capital assessment (weak interaction, Table 1) often only takes the above-ground component of soil (i.e. the production potential) into account, resulting in the soil being undervalued and overlooked in key management and policy decisions (Hewitt et al., 2015). Being overlooked and not realising the full value of soil can lead to land degradation, reduced productivity and economic losses. This is illustrated by Kidd et al. (2015) who uses a gross margin approach estimate the value derived from soil. This estimates the value of agriculturally productive and effectively, but drastically underestimates the world heritage protected National park that covers much of the west of the state of Tasmania and provides significant ecosystem and recreational services.

A multi-functional approach to evaluation of land through the soil is more comprehensive (Dominati et al., 2010). The annual value of the soil based on its extensive contribution to ecosystem services has been estimated a USD$11.38 trillion by McBratney et al. (2017b). We most commonly view soil based upon its production value, but we need to move beyond this if we want to secure food availability for the future.

Food availability is inextricably linked to the relationship the grower has with the land and how much control they have over management decisions (sovereignty) (moderate interaction; Table 1). The degree of sovereignty is driven by the type of tenure and ownership the farmer possesses over the land. Land tenure regulates how the land is used, and the rights of the grower to control and earn a living from agricultural production (Ashley, 2016). If tenure is short or insecure, farmers will be less likely to invest time and money into soil conservation, new technology, and sustainable cropping systems (Besley, 1995; Fraser, 2004; Lovo, 2016).

Landscapes with soil capable of sustaining agro-ecosystems are diminishing around the world, due to desertification, degradation, and urban expansion (Pacheco et al., 2018). With the aim to prevent further degradation, numerous countries have taken measures to govern (strong interaction, Table 1) land use through the establishment of a land classification system, for example Land Environments of New Zealand classification (LENZ; Manaaki Whenua – Landcare Research (2019)), Biophysical Strategic Agricultural Land (BSAL; NSW Government (2019)), and the Provisional Agricultural Land Classification in England and Wales (ALC; Natural England, 2019). These guidelines have been established for differing reasons; in Australia the aim of BSAL is to protect arable land from mining, New Zealand's classification system has been established to protect biodiversity and England's Agricultural land classification has been established to protect arable land from urban expansion.

Urban expansion in many regions is uncontrolled or favoured over agricultural production (Hu et al., 2018; Radwan et al., 2019). To ensure food availability and associated ecosystem services for the future, rather than burying arable land under concrete and moving on we need to explore alternatives. The concept of land degradation neutrality aims to maintain a stable source of ecosystem services and food production, either by preventing degradation and loss, or reversing degradation (Cowie et al., 2018). Degraded sites are a result of overexploitation and are areas in which the soil quality has diminished or heavily eroded beyond economical use (Behrend, 2016), or the site could be heavily contaminated. By remediating heavily degraded land per hectare of valuable land lost, we are on the path to maintaining stable food production and ecosystem services.

5.2. Access (direct)

In this paper we consider people's access to food either indirectly through their local market or supermarket (indirect), or they may be smallholder/subsistence farmer (direct).

For subsistence farmers and their families, access to food is directly related to the capability of the soil (weak interaction, Table 1). If the soil is of poor quality, unable to support diverse crops, or if their allotment is simply not large enough, farmers and their families will not have access to a sufficient quantity and quality of food. This stress may be alleviated if farmers have access to markets, however those in rural or remote areas may not.

The condition of the soil (weak interaction, Table 1) ensuring sufficient access involves the adopting of sustainable management and adapting to the changing climate and is achievable, but more work and support is needed to aid the adoption of these practices (Chivasa, 2019; Yahaya et al., 2018). If not addressed, and if the changes in condition are significant enough, irreversible changes to soil capability may occur, impacting ability to adapt and forcing farmers off their land to more populated areas as environmental refugees (Bernzen et al., 2019; Myers, 2002).

Access by subsistence farmers to food provides sustenance and an income, so they already place a high value on the soil. In many cases, farmers also understand the importance of services provided by ecosystems surrounding and within their agricultural system (Kandel et al., 2018). Placing a higher value on ecosystem services (disconnection, Table 1) and striving to maintain diversity within the soil environment would enable greater production, crop quality and nutritional value, therefore increasing the farmer's income and wellbeing.

In the earlier review the access to land tenure significantly increases connectivity between subsistence farmers and the soil (weak interaction, Table 1), influencing their key land management decisions (Ding, 2003; Hartvigsen, 2014; Obeng-Odoom, 2012). Simultaneously, joining a local co-operative can help ensure farmers receive a fair price for their produce; however, more guidance by governments and NGOs is needed to ensure resilience, as many co-operatives are short-lived or unsuccessful (Borda-Rodriguez and Vicari, 2014). Fairer pricing enables farmers to make a greater profit, enabling them to afford a more diverse diet and allowing them to invest in improved farming technologies and more sustainable land management.

5.3. Access (indirect)

Many of the issues identified for subsistence farmers also impact those indirectly deriving their food. The degradation of land reducing capability of the soil, and poor soil condition, impact the value chain and where food is sourced, impacting food availability and prices (D'Odorico et al., 2014); this may result in economic losses for producers in the affected areas through loss of trade (Gomiero, 2016; D'Odorico et al., 2014). Meanwhile, consumers are becoming more concerned about the provenance of their food; being mindful of where the food has come from, the associated impacts upon the environment, and ethical treatment of animals (Birch et al., 2018).

#### Food security and soil security are intrinsically linked – decimation of soil has cascading effects for global food supply

Pozza and Field 20 – Research Associate at the the University of Sydney Institute of Agriculture and School of Life and Environmental Sciences; Professor of Global Soil Security & Soil Science Education at the Unviersity of Sydeny [Liana E.; Damien, J. “The Science of Soil Secuirty and Food Security” ScienceDirect. 11/11/2020.]

Food and Nutrition Security are intrinsically linked to the soil. Trying to accommodate growing food demand through unsustainable intensification and management practices is degrading the soil and we are running out of [arable land](https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/arable-land). To avoid further degradation, land needs to be used based upon what it can do. We need to care for the soil and take measures to maintain its capability and condition, or work to restore what has been lost through regenerative agriculture. The way people connect to the soil influences management decisions and consumer choices. Education helps people connect and understand their impact upon the soil, while policy and governance ensures continued protection, regeneration, and sustainable management of the soil. Obtaining Food Security is difficult if we do not have healthy soils to support production. In urban areas we are less connected to the soil but are still heavily reliant upon it. Subsistence farmers, who possess a more direct connection to the soil are most sensitive to poor soil condition. In terms of utilisation, our nutrition and health come from the soil – if the soil in which our produce is grown lacks the micronutrients we need, such as Zinc and Copper, then we will be deficient.

The dimensions of Soil Security are well-defined, but require further thought and research on potential indicators of connectivity. In contrast, the dimensions of Food Security have clear definitions, but they are harder to assess, so development of more consistent assessment is needed, or potentially a way to use Soil Security as a proxy measure in the meantime.

Agricultural systems are highly variable, depending on the natural environment, socioeconomics and the political climate of a region. There is not a ‘one solution fixes all’ approach and ways forward need to be investigated and innovation developed accordingly.

### Impact - Biodiversity

#### Soil quality solves a laundry list of ecological impacts---biodiversity, carbon sequestration, agricultural productivity

IUCN 22 –union of governmental and non-governmental organizations specializing in conservation efforts [International Union for Conservation of Nature “Biodiversity and soil health: how protecting one, safeguards the other.” IUCN. 5/19/22]

Resilient highlands project in Guatemala

From nature-based solutions to climate, health issues, food and water security, and sustainable livelihoods, biodiversity is the foundation upon which we can build back better. A key premise of building back better is a strong and solid foundation. That foundation on planet earth is soil.

Healthy soil has the ability to sequester carbon and help reverse the effects of climate change, it better absorbs and retains water, cutting down on evaporation and creating resilience to drought and extreme weather, it increases soil fertility and productivity, increases the nutritional value of food and forage, supports greater biodiversity and ensures species stability.

Altiplano, resilient highlands project, GuatemalaSoil hosts a quarter of our planet’s biodiversity. Billions upon billions of earthworms, nematodes, insects, fungi, bacteria, and other invertebrates make their home in soil. These creatures use the organic material found in soil as food and work together to break down materials into minerals and nutrients that support healthy growth for the rest of the ecosystem, including crops and animals on farms.

Yet, over half our agricultural soils are already degraded. Soil degradation is the physical, chemical and biological decline of soil quality. Caused by unabated deforestation and urbanisation, industrial pollution, overgrazing, and unsustainable agricultural practices, this loss threatens our very survival. A change in farming practices has never been more urgent.

Through evidence-based dialogue between the agriculture and conservation sectors, IUCN is working on a large-scale Sustainable Agriculture and Land Health Initiative to promote regenerative approaches that restore and conserve biodiversity on farms and agricultural landscapes.

“Sustainable agriculture can feed the world while protecting the environment that supports it. Agriculture depends on biodiversity, so in order for agriculture to be sustainable, it must contribute to conserving that biodiversity, particularly the soil which safeguards ecosystems and their services”, said Jonathan Davies, IUCN Senior Agriculture Advisor.

### AT: Feeds the Hungry

#### Gmos don’t solve hunger

Green America No Date[“GMOs Don’t Feed the World”, Green America, <https://www.greenamerica.org/gmos-stop-ge-wheat/genetic-engineering-gmos/gmos-dont-feedworld#:~:text=The%20vast%20majority%20of%20GMO,%2C%20and%20self%2Dgenerate%20pesticides>., accessed 6-28-2022]

The vast majority of GMO crop production does not go towards direct food consumption; rather, it is used for the production of animal feed and ethanol. These are crops engineered to withstand, work in partnership with, and self-generate pesticides. They are not engineered to increase yield or face climate-related challenges to growth, such as drought tolerance. There is one variety of corn has been bred for drought resistance, but it is likely to only be effective in 15 percent of US corn fields and is not effective in severe or extreme drought, which we are expected to have more of in the coming years.

Industrial agriculture isn't the answer.

Increases in yield from GE crops are a result of a decrease in yield lost to pests from Bt crops, pesticides, and an increase in fertilizer use (made from petroleum, defeating the purpose of ethanol). Unfortunately, growing weed and pest resistance is already decreasing their effectiveness, requiring much more dangerous pesticides and making useless one of the most used organic pesticides, Bt. These minimal increases in yield have come with major externalities, including but not limited to water pollution, pollinator loss, and soil degradation, that put future food security at risk. After decades of attempts, Big Biotech has not been successful in breeding GE seeds that increase yield or reduce water use. Conventional breeding outperforms genetic engineering when it comes to nitrogen use efficiency (the ability for crops to pull nitrogen out of soil, developing a more efficient use of fertilizer, ultimately decreasing the demand for fertilizers) and water use efficiency (WUE).

Overall, conventional breeding is responsible for most of the successful advances in yield. It also happens on a much shorter timeline at a much lower cost. Industry studies show that it takes a minimum of ten years to develop a GE crop and nearly $150 million; whereas conventional crops take only $1 million to develop, improvements WUE and drought resistance naturally occur at an estimated 1 percent each year. While Big Biotech develop GMOs in a lab, farmers are improving traditional crops in the field. Due to this drag rate by the time GE crops are finally released they are actually behind their conventional counterparts.

Conventional crops could also be more effectively bred to work in partnership with the cultural food needs and geographical climate and soil challenges unique to specific regions. Forcing GE crops into developing countries with higher existing biodiversity puts that biodiversity and future food supplies at risk by threatening native species and practices. There are an abundance of types of crop varieties (both already in use and wild) accessible to breeders and growers. It is important that we tap into this vast resource to expand nutrient diversity and accessibility.

### AT: Safe

#### They won’t be developed safety – the EU lacks a regulatory framework.

CEO 2021 - Corporate Europe Observatory has been tracking the industry’s lobby attempts to get new GM techniques deregulated since 2015   
["Derailing EU rules on new GMOs," Mar 29, https://corporateeurope.org/en/2021/03/derailing-eu-rules-new-gmos]

The January 2020 report’s conclusions show that a quick fix-approach to deregulate genome editing products is seen as necessary – “to be competitive globally”– but not enough. At least some of the participants aim for “a long-term paradigm shift” towards legislation that is product-based. This would mean that GMOs would only be assessed looking at their new trait, not taking into account the process (ie the technique) by which they were created. Sidenote

Officials were told that if GM regulations were lifted, “other regulations exist that will still ensure safety”. However, these other regulations (such as plant variety registration) do not assess food safety and environmental aspects as the GM risk assessment does, according to this analysis commissioned by the German Federal Agency for Nature Conservation.

### AT: Aff epistemology

#### Narratives of GMO effectiveness prop up the agribusiness industry – lock in low food and environmental standards, degrade soil, and hurt small farmers

Soil Association 20 British baised charity organization that campaigns against intensive farming and emphasized local production [“Stop Genetic Modification.” The Soil Association. Nov 2020]

Don’t believe the hype: New GM techniques In July 2018, the European Court of Justice ruled that new genetic editing techniques count as GM and must be properly regulated. We welcomed this move. These newer techniques, which include so-called ‘gene editing’, continue to be regulated as GM in the UK following Brexit. In 2019/20, the Government announced an aspiration to change this, particularly for new techniques which interfere with DNA, but do not insert genes from foreign species. But GM has a track record of failing to deliver. We are told that GM foods are needed to feed our growing population and to meet the challenges of climate change and pests, yet real world experience has shown that GM crops have not lived up to their promises. This booklet from Claire Robinson (Editor of GMWatch.org) and produced by the Sheepdrove Trust (pdf, 20mb) debunks the myths spread by the producers of GM products and the chemicals they rely on. These newer technologies, like ‘old GM’ are perfectly suited to distract from what is really needed, and to end up concentrating corporate control, putting big agribusiness firmly in the driving seat. We only have to look at the US and Brazil to see what direction GM takes us in - low food and environmental standards, farmers faced with degraded soils that are far from resilient to climate change, and wildlife in crisis. What are the risks of genetic modification? ‘This is a bottle that once opened, cannot be closed. To check the contents first, mistakes and all, is just scientific common sense’. All GM techniques, new and old, should remain subject to risk assessment, traceability and labelling to ensure farmer choice, consumer choice and the safeguarding of health & environment. Regulation is needed not only for novel traits, but also for the process of DNA interference itself. DNA interference is something all GM techniques do, including gene editing. It raises a great deal of scientific uncertainty. Recent research has raised more questions than answers, highlighting unexpected effects in all editing techniques, in the form of DNA errors and changes in gene expression. The repercussions are not well understood. Newer ‘gene editing’ techniques raise another level of uncertainty given their completely novel ability to do a large number of different edits, allowing changes to quickly accumulate. Organic food and farming Organic standards adopt a precautionary approach to new technologies and prohibit GM. The organic sector must be given the possibility and capacity to remain GMO-free. To protect the income and livelihoods of organic farmers and processors, all contamination of non-GMO materials should be prevented by the GMO producer in line with the polluter pays principle.

## DA/Turn - China Biotech Good

### Biotech Neg- China won’t follow on

### 1NC – Innovation

#### Competitive engagement with China over biotech stifles innovation

Moore and Coplin 22 (Scott Moore and Abigail Coplin, “Closing the U.S. to Chinese Biotech Would Do Far More Harm Than Good”, China File, April 8th 2022, <https://www.chinafile.com/reporting-opinion/viewpoint/closing-us-chinese-biotech-would-do-far-more-harm-good>, WC-NAS)

China is fast becoming a biotechnology powerhouse and a perceived threat to the longstanding dominance of the United States in the sector. In Washington, these developments have been greeted in much the same way as China’s growing prowess in artificial intelligence and other emerging technologies: with panic and punitive measures. Last May, Florida Republican Senator Marco Rubio introduced the [Genomics Data Security Act](https://www.govinfo.gov/content/pkg/BILLS-117s1744is/pdf/BILLS-117s1744is.pdf), which would, among other actions, ban the National Institutes of Health from funding China-affiliated entities. In September, Arkansas Republican Senator Tom Cotton and Wisconsin Representative Mike Gallagher [called](https://www.cotton.senate.gov/imo/media/doc/bgi_letter.pdf) for “[blacklisting](https://www.cotton.senate.gov/imo/media/doc/bgi_letter.pdf)” Chinese biotechnology companies over concerns they may be attempting to gather biomedical information on U.S. citizens for nefarious purposes. Just a few months later, the U.S. government [sanctioned](https://public-inspection.federalregister.gov/2021-27406.pdf) 12 Chinese life sciences research institutes and 22 private firms on security grounds.

There is a big problem, however, with these largely reactive, security-focused responses. Biotechnology is an intrinsically transnational and rapidly evolving sector that holds just as much promise for mutually beneficial collaboration and cooperation as for competition and contention. These distinctive characteristics of biotechnology mean that **Washington’s security-driven approach to China and biotechnology risks harming U.S. competitiveness in the sector instead of enhancing it**, while also limiting America’s ability to share in the development of mutually-beneficial technologies and work with Beijing to address the shared challenges posed by rapid developments in fields like gene editing. U.S. policy and strategy on China and biotechnology must strike a better balance between addressing legitimate concerns while maintaining the openness and innovation that underpin America’s competitive advantage in emerging technology.

Washington’s recent focus on China and biotechnology reflects the sector’s rapid growth, both in China and elsewhere. Biotechnology has been a focus of Beijing’s scientific and technological development plans since the 1980s, but more recently, [ambitious policy goals](https://www.brookings.edu/research/chinas-role-in-the-global-biotechnology-sector-and-implications-for-us-policy/) have spurred sharp increases in public and private investment into the sector. Estimates of [state investment](https://www.brookings.edu/research/chinas-role-in-the-global-biotechnology-sector-and-implications-for-us-policy/) in the [biotechnology sector](https://www.nature.com/articles/%20d41586-018-00542-3) over the past decade reach as high as $100 billion. In a [2020 speech](https://www.rfi.fr/cn/%E4%B8%AD%E5%9B%BD/20200916-%E4%B9%A0%E8%BF%91%E5%B9%B3%E4%BF%83%E7%94%9F%E7%89%A9%E7%A7%91%E6%8A%80%E8%A6%81%E8%87%AA%E5%B7%B1%E6%8E%8C%E6%8F%A1-%E7%94%A8%E4%B8%BE%E5%9B%BD%E4%BD%93%E5%88%B6%E7%AA%81%E7%A0%B4%E6%8A%80%E6%9C%AF), Xi Jinping himself called for China to “master” biotechnology and mount a “society-wide effort” to achieve breakthroughs in the field. The life sciences, Xi went on to say, could be a “national treasure” that China must “seize with its own hand.”

Yet such statements belie the ways biotechnology differs from other fields. Biotechnology intrinsically blurs boundaries between science and commerce, market and state, the global and the national, and even personal privacy and collective interest. Progress [depends](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.196.4322&rep=rep1&type=pdf) more heavily in biotech than in other high-tech industries on knowledge networks and transnational collaboration, [especially](http://science.sciencemag.org/content/356/6339/696.2.abstract) those that connect the United States and China.

A raft of studies on scientific and technological innovation conducted over the past two decades demonstrate that the ability of individual researchers to collaborate with firms and institutions in different countries significantly increases the quality of their work, especially when the collaboration is [between](https://www.science.org/doi/10.1126/science.aan5197) U.S. and Chinese researchers, and especially in the [field of biotechnology](https://www.google.com/imgres?imgurl=https%3A%2F%2Fi1.rgstatic.net%2Fpublication%2F324472765_Mapping_microbiology_with_scientometrics_help_provide_a_clearer_vision_of_microbiology_research_around_the_globe%2Flinks%2F5ad5e29da6fdcc2935813414%2Flargepreview.png&imgrefurl=https%3A%2F%2Fwww.researchgate.net%2Fpublication%2F324472765_Mapping_microbiology_with_scientometrics_help_provide_a_clearer_vision_of_microbiology_research_around_the_globe&tbnid=MKhzUMjj6spg0M&vet=12ahUKEwi-7POBmrn1AhVpqHIEHV-tCgwQMygAegQIARAb..i&docid=h7ZYVjrdFWTxWM&w=850&h=1118&itg=1&q=Marcio%20L.%20Rodrigues%2C%20Leonardo%20Nimrichter%2C%20and%20Radames%20Cordero%2C%20%22The%20Benefits%20of%20Scientific%20Mobility%20and%20International%20Collaboration%2C%22%20FEMS%20Microbiology%20Letters%20363%20(2016)%3A%201-5&ved=2ahUKEwi-7POBmrn1AhVpqHIEHV-tCgwQMygAegQIARAb). COVID-19 vaccines likewise provide a powerful example of how U.S.-China knowledge networks help translate basic biotech research into commercial and medical applications. One of the key innovations underpinning the development of Pfizer’s and Moderna’s mRNA vaccines—the stabilization of the coronavirus spike protein—[stemmed](https://www.thisamericanlife.org/727/transcript) from the research of Dr. Wang Nianshuang, a graduate of China’s Tsinghua University studying on a postdoctoral fellowship in the lab of Dr. Jason McLellan at the University of Texas at Austin.

Even in the realm of commercial biotechnology, the U.S. and Chinese biotechnology sectors are more complementary than competitive. Many [U.S.](https://bioduro-sundia.com/) and [Chinese](https://www.beigene.com/en-us) biotech firms employ transnational business models that leverage the very different strengths of the American and Chinese biotechnology ecosystems, while many others—like BeiGene and Edigene—were essentially “born global.” Chinese biopharmaceutical companies [harness](https://www.thewirechina.com/2021/10/10/biotechs-borders/) China’s large population of patients to conduct time- and cost-efficient clinical trials that help inform U.S. regulatory approvals. Cancer drugs developed by Chinese firms show [considerable promise](https://www.wsj.com/articles/china-biotechs-lure-industry-talent-in-the-u-s-11560690000) in lowering prices and [offering](https://www.businesswire.com/news/home/20210617005128/en/BeiGene-Announces-First-Patient-Dosed-in-Global-Phase-3-Trial-of-Anti-TIGIT-Antibody-Ociperlimab-in-Non-Small-Cell-Lung-Cancer) new treatment options to patients in the U.S. and elsewhere. Likewise, Chinese, American, and European firms all regularly [license](https://static1.squarespace.com/static/5a9c785b70e80290e8ec1399/t/61f813b3ce78756a23b47880/1643647923437/220129+Press+Release_EdiGene+Arbor_FINAL.pdf) each other’s technologies and [drugs](https://www.reuters.com/business/healthcare-pharmaceuticals/novartis-options-beigene-anti-cancer-therapy-1-billion-deal-2021-12-20/) as part of their technological development and marketing strategies. The corporate c-suites and scientific advisory boards of individual firms likewise often consist of individuals of multiple nationalities with experience working in both American and Chinese contexts. Ultimately, in both academic research and commercial science, the division between American and Chinese biotechnology is less clear and less meaningful than in other high-tech fields.

Biotechnology’s reliance on basic science and transnational knowledge networks also means that competition in biotechnology plays out differently than it does in other high-tech industries. Unlike the semiconductor and telecommunication sectors, whose development depends on expensive equipment and hard-to-acquire manufacturing expertise, barriers to entry in biotechnology are low. Likewise, as Eric Lander’s now infamous [mapping](https://www.cell.com/action/showPdf?pii=S0092-8674%2815%2901705-5) of CRISPR’s development illustrates, both foundational research and key innovations in biotechnology often take place in the public domain and build on incremental advancements made across the globe. When breakthroughs, like employing CRISPR as a means of gene-editing, do occur they [spread](https://www.science.org/content/article/its-crispr-revolution-china-becomes-world-leader-genome-editing) through global scientific networks with little heed for national boundaries. Consequently, it is not a zero-sum industry in which a single innovation sets any firm or country ahead for a prolonged period. Take mRNA vaccines as an example. Not only did Moderna and the international Pfizer-BioNTech collaboration concurrently develop mRNA vaccines, China is also currently finishing up phase three trials for its own mRNA vaccine. In contrast to the Moderna and Pfizer-BioNTech vaccines, however, the [Walvax-Suzhou Abogen-PLA Academy of Military Science vaccine](https://www.reuters.com/business/healthcare-pharmaceuticals/chinas-mrna-covid-vaccine-candidates-2022-02-28/) is [thermostable](https://www.mdpi.com/2076-393X/9/9/1033/htm) at room temperature for seven days—a key advantage when trying to vaccinate the developing world against COVID-19 and other diseases.

Given these dynamics, the restrictive policy tools under discussion in Washington pose serious risks to U.S. competitiveness in the sector. While policymakers [frame](https://www.bloomberg.com/news/articles/2021-05-26/biden-s-asia-czar-says-era-of-engagement-with-xi-s-china-is-over) “engagement” and “competition” as opposing modalities of contending with China’s technological rise, maintaining an innovative edge in biotechnology requires staying plugged in to international scientific networks and engaged with one’s competitors, regardless of whether they are domestic or international. This is, after all, part of why the biotechnology industry tends [to develop](https://journals.sagepub.com/doi/pdf/10.2189/asqu.2009.54.1.90?casa_token=iY9A77rxPmcAAAAA%3ArqTDJTJ4H9FB3uQwrQci_8p7mH8WETKMqQLbwcdo5oalT75AMdxAt8NHItvNrEHTTg-Qz87jg_J00g&) in clusters. Similarly, [Japan’s ongoing struggle](https://www.sup.org/books/title/?id=24171) to grow its biotechnology industry, given its [low level of integration](https://commercialbiotechnology.com/index.php/jcb/article/view/837) into global clinical research networks, highlights the potential perils of constricting U.S.-China knowledge networks in the sector. Blocking Chinese biotechnology companies from entering American markets is unlikely to impede China’s emergence as a major player in the industry, but it does threaten to prevent American firms and researchers from accessing the talent, ideas, and technologies these firms have to offer. To decouple is to risk missing out, and thus risk falling behind.

#### Regulations are bad; even if positively intended, they lose us the tech race

Ezell 21 (Stephen Ezell, “Going, Going, Gone? To Stay Competitive in Biopharmaceuticals, America Must Learn From Its Semiconductor Mistakes”, Information Technology & Innovation Foundation, <https://itif.org/publications/2021/11/22/going-going-gone-stay-competitive-biopharmaceuticals-america-must-learn-its/>)

U.S. leadership in advanced-technology industries is never guaranteed. America once held dominant market shares in a long list of industries—including consumer electronics, machine tools and robotics, telecommunications equipment, and solar panels—only to see those leads significantly erode, and in some cases evaporate entirely. And because process and product innovation are so often joined at the hip, losing production capacity to overseas competitors often leads to loss of U.S. innovation capacity. Some contend it’s acceptable to cede leadership in innovation industries because America will just create new ones. But intensifying global competition, notably from China, now makes such indifference untenable.

America’s loss of semiconductor manufacturing capacity (which has fallen from 37 to 12 percent of global production over the past three decades) and its lag in cutting-edge chip development both are due in significant part to policy inattentiveness. This should serve as a warning for policymakers: Failing to maintain a policy environment that nurtures both innovation and domestic production capability risks sacrificing U.S. leadership in other advanced-technology industries, such as biopharmaceuticals.

ITIF’s Analysis and Findings

America’s experience with the semiconductor industry is especially telling because it’s an industry the United States wholly created and led, yet it lost leadership to Japanese competitors in the late 1970s. The industry recovered competitiveness in the 1980s, in part through effective policies like SEMATECH and research and development (R&D) tax credits, but once again allowed that position to erode over the subsequent three decades, to such an extent that policymakers are now calling for a $50 billion investment in the form of CHIPS Act to restore domestic semiconductor manufacturing capacity and innovation capability.

The tenuous nature of U.S. leadership in advanced-technology industries is also illustrated by America’s experience with biopharmaceuticals. Until the latter half of the 1970s, Europe led in this industry, creating more than twice as many new-to-the-world drugs. But by the 2000s, that had shifted, and the United States led the world. This shift was not due principally to differences in firm performance, but to a suite of policies that made Europe less competitive: Stringent regulations on biotechnology made Europe less attractive for biotech drug developers. European regulations also significantly limited drug company mergers, making it difficult for European firms to gain needed scale as the industry started to globalize after the 1970s. Finally, and most importantly, Europe began to impose stringent drug-price controls that meant the U.S. competitors could earn and reinvest more in R&D.

It also helped that the United States adopted an array of favorable policies, including increased funding for National Institutes of Health; tax incentives to encourage biomedical investment; policies like the Bayh-Dole Act to encourage biopharma technology transfer from universities to companies. And unlike Europe, U.S. policymakers did not impose draconian price controls, so innovators could earn sufficient revenues to continue investing in future biomedical innovations.

By the 1990s, most experts in Europe were bemoaning the loss of EU biopharma competitiveness to the United States. But competitive advantage can be fleeting, and from 2003 to 2017 the United States lost at least 22 percent of its drug manufacturing capacity. The COVID-19 pandemic revealed increasing U.S. dependence on foreign suppliers, especially for many active pharmaceutical ingredients. And while the United States is still the global leader in biopharma innovation—as evidenced by the fact that the two most effective COVID-19 vaccines are American—other nations, especially China, are beginning to challenge that leadership. On top of this, many of the policies that enabled the United States to wrest leadership from the EU are now under serious threat—including the threats of stringent drug-price controls, weaker intellectual property rights, and fewer tax incentives for new drug development.

U.S. policymakers did not learn from a half-century of innovating and then losing a host of advanced industries to foreign nations. But the loss of competitive advantage in semiconductors can serve as a wake-up call. The lesson should be that policymakers can never take the health of America’s advanced-technology industries for granted, or even worse, impose policies that weaken that advantage. If they do, then the all-too-real risk is that they will find themselves a decade later having to contemplate a similar $50 billion package to restore the biopharmaceutical industry.

### 1NC - AT: Bioethics

#### China threat in biotech ethics is overhyped; they aren’t a security threat

Moore and Coplin 22 (Scott Moore and Abigail Coplin, “Closing the U.S. to Chinese Biotech Would Do Far More Harm Than Good”, China File, April 8th 2022, <https://www.chinafile.com/reporting-opinion/viewpoint/closing-us-chinese-biotech-would-do-far-more-harm-good>, WC-NAS)

Just as security-driven approaches stand at odds with many realities of the biotechnology sector, U.S. policymakers and politicians sometimes mischaracterize and exoticize the threats that China’s growing global role in biotechnology pose to U.S. national security. These mischaracterizations often take the form of highlighting behavior that is hardly unique to China, and is, in fact, common in the industry. Fears [expressed](https://www.nbcnews.com/politics/national-security/china-has-done-human-testing-create-biologically-enhanced-super-soldiers-n1249914) by some U.S. officials that Beijing is pursuing research in areas like human genetic enhancement for military purposes, for instance, are wildly exaggerated; such techniques lie [well beyond](https://www.bbc.com/news/world-55905354) the realm of scientific feasibility. Moreover, while [links](https://ndupress.ndu.edu/Portals/68/Documents/prism/prism_8-3/prism_8-3_Kania_82-101.pdf) between the People’s Liberation Army (PLA) and Chinese biotechnology companies and research institutes should be thoroughly investigated, **not all military-funded medical research and dual-use technologies constitute security threats.** For instance, the media has [problematized](https://www.reuters.com/investigates/special-report/health-china-bgi-dna/) BGI’s hearing loss research with the PLA, yet the American Department of Defense [funds](https://cdmrp.army.mil/search.aspx) multiple hearing loss projects at American academic and commercial medical institutions, in addition to countless other medical research projects on topics as uncontroversial as [ovarian](https://cdmrp.army.mil/search.aspx) cancer, [breast cancer](https://cdmrp.army.mil/search.aspx), and [lupus](https://cdmrp.army.mil/search.aspx). In both countries, many military-funded dual-use projects in the biological sciences consist of rather innocuous medical research, including [vaccine development](https://www.thelancet.com/journals/lanmic/article/PIIS2666-5247(21)00280-9/fulltext#%20).

Another dubious concern is the growing collection of biomedical data by Chinese firms operating abroad. Surreptitious collection of personal medical data was highlighted last summer both by Senator [Tom Cotton](https://www.cotton.senate.gov/news/press-releases/cotton-warns-of-risks-to-american-athletes-if-us-participates-in-beijing-olympic-games) and in a [Reuters report](https://www.reuters.com/article/us-health-china-bgi-dna-idUSKCN2ED1A6) finding that BGI Group, a leading Chinese genomics firm, was collecting data from millions of prenatal tests offered to pregnant women within and outside China. But the sort of collection undertaken by BGI, for instance, does not appear to be illegal, or even out-of-line with the practices of its foreign competitors. While BGI’s data collection efforts benefit from China’s more centralized healthcare provision system, using genetic diagnostic tests to build datasets is the main business model of both the [direct-to-consumer testing industry](https://www.barrons.com/articles/23andme-is-really-a-biotech-citi-says-51626108392) and the clinical genetics industry globally. In fact, BGI’s proclivity for academic research, [publishing](https://www.natureindex.com/institution-outputs/china/bgi/5139072d34d6b65e6a002189), and international collaboration arguably renders some aspects of the organization’s data use more transparent than some of its international counterparts.

At the same time, U.S. policymakers’ focus on surreptitious biomedical collection by Chinese firms abroad risks obscuring a bigger challenge to U.S. interests: Beijing’s increasingly protectionist approach to biomedical data-sharing. Thanks to its massive national health insurance scheme, China’s state has access to [data on](https://www.bmj.com/content/360/bmj.j5910) hundreds of millions of individual patients. This data could be extremely valuable both for medical research purposes and commercial applications, potentially facilitating treatment discovery and development. Yet China has adopted [strict rules](http://www.gov.cn/zhengce/content/2019-06/10/content_5398829.htm) like the 2019 Regulations on the Management of Human Genetic Resources, requiring foreign firms, universities, and other entities to apply for permission from the state to use Chinese biomedical data. While many of these regulations have [existed since 1998](http://www.most.gov.cn/kjzc/gjkjzc/kjtjybz/201308/P020130823579540624649.pdf), they have been increasingly [enforced](https://technode.com/2018/10/29/bgi-denies-risk-concerning-dna-sequencing-data-leakage/) in recent years and are now being [implemented](http://www.most.gov.cn/tztg/202203/t20220322_179904.html) more vigorously, resulting in [retracted papers](https://www.nature.com/articles/s41597-020-0430-x) and [strained](https://www.nature.com/articles/d41586-018-07222-2)—if not [cancelled](https://www.reuters.com/investigates/special-report/health-china-bgi-dna/)—international collaborations. China’s [2020 Biosecurity Law](http://www.npc.gov.cn/npc/c30834/202010/bb3bee5122854893a69acf4005a66059.shtml) likewise contains explicit claims of sovereignty over China’s genetic and biological resources. While such regulations are [not unique](https://www.tandfonline.com/doi/pdf/10.1016/j.polsoc.2009.09.007?needAccess=true), Beijing’s massive store of biomedical data may create a significant commercial and scientific advantage for Chinese biotechnology firms. Washington must take this risk more seriously and push for greater reciprocity.

Another legitimate worry is the perpetuation of human rights abuses tied to genetic data collection within China’s borders. Biomedical data, some of it amassed and analyzed with the [help](https://www.nytimes.com/2019/02/21/business/china-xinjiang-uighur-dna-thermo-fisher.html) of U.S.-based researchers and [U.S.-origin equipment](https://www.nytimes.com/2020/06/17/world/asia/China-DNA-surveillance.html), has been [gathered](https://www.aspi.org.au/report/genomic-surveillance) from minority populations like the Uyghurs and large portions of the male Han population without informed consent and used to compile massive genetic databases. Journalists report that these databases are being used in forensic DNA profiling and potentially [phenotyping](https://www.nytimes.com/2019/12/03/business/china-dna-uighurs-xinjiang.html), making it easier to identify members of minority groups and potentially making them more susceptible to discriminatory surveillance or other forms of state repression. Such practices deserve the condemnation of the U.S. government and of the international community, and warrant a firm policy response, including banning the export of biomedical equipment to Chinese entities involved in such abuses. To its credit, the Biden administration has attempted to curb these practices, including through its [recent December sanctions](https://www.federalregister.gov/documents/2021/12/17/2021-27406/addition-of-certain-entities-to-the-entity-list-and-revision-of-an-entry-on-the-entity-list).

Yet at the same time, Washington and Beijing have good reasons to see certain areas of biotechnology as grounds for cooperation rather than conflict or competition. The most advanced areas of biotechnology, like gene editing and synthetic biology, are double-edged swords. They show great promise to help cure chronic diseases and develop drought-resistant crops, but also to create dangerous new viruses, human genetic modifications, and even [genetically-engineered terrorism](https://www.centerforhealthsecurity.org/our-work/pubs_archive/pubs-pdfs/2020/200218-CRISPR-Cautions.pdf). The risks and threats posed by these emerging biotechnologies [cannot be confined](https://foreignpolicy.com/2019/11/08/cloning-crispr-he-jiankui-china-biotech-boom-could-transform-lives-destroy-them/) to any one country. Potentially dangerous biotechnology research can be undertaken virtually anywhere, meaning that all countries need to develop and enforce rules preventing research that could create new viruses or bioweapons, for example. China is an especially important player in international biosafety and biosecurity, and the country’s 2020 legislation on both topics is, on paper at least, among the [most stringent](http://www.npc.gov.cn/npc/c30834/202010/bb3bee5122854893a69acf4005a66059.shtml) in the world. Gene therapy trials based on somatic editing are underway in both the [U.S.](https://www.nature.com/articles/d41586-021-01776-4) and [China](https://www.npr.org/sections/health-shots/2018/02/21/585336506/doctors-in-china-lead-race-to-treat-cancer-by-editing-genes), and as researchers in both countries begin to tinker with the fundamental building blocks of life, engagement on the use of these groundbreaking, but potentially dangerous, technologies is needed both to ensure transparency as well as to begin the difficult process of establishing mutually-agreed rules and norms.

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China already pledged to improve its bioethics---aff’s not key or it inevitably fails

Ministry of Ecology and Environment 21 [The Ministry of Ecology and Environment is a department of the State Council of the People's Republic of China; 4/16/21; “Biosecurity law goes into effect”; <https://english.mee.gov.cn/News_service/media_news/202104/t20210416_828952.shtml>] //CH

Legislation seen as 'major milestone' protecting people's health, environment

China's first biosecurity law went into effect on Thursday, marking a "major milestone" for upholding the rule of law in areas critical to people's health, the environment and national security, experts said.

The law introduced regulations in eight major categories－infectious disease prevention and control, regulating research and applications related to biotechnology, biological laboratory safety and practices, protecting biological resources and human genetic resources, preventing invasive species and preserving biodiversity, tackling drug resistant microbial infections, deterring bioterrorism, and other activities related to biosecurity.

Experts called the law "foundational legislation" that will guide, coordinate and introduce new laws and regulations related to biosafety, thus supporting a more sustainable and harmonious coexistence of humanity and nature.

### 1NC – China Sets Standards

#### China creates effective biotech standards independent of US leadership– They’re creating ethical international norms now

Terry 22 (Mark Terry, “China Introduces Strict New Bioethics for Genetics Materials”, BioSpace, April 29th 2022, <https://www.biospace.com/article/china-introduces-new-bioethics-guidelines-for-genetics-materials/>, WC-NAS)

China recently [outlined](https://geneticliteracyproject.org/2022/04/29/chinas-new-bioethics-rules-foreign-companies-prohibited-from-collecting-human-genetic-resources-inside-china/) new [proposals](https://global.chinadaily.com.cn/a/202204/15/WS6258b161a310fd2b29e57129.html) for bioethics related to human genetic resources. Reportedly, these will “clarify jurisdictions of regulatory bodies and enhance supervision related to biopharmaceutical research.”

The country’s new proposed rules define human genetic resources, according to the Genetic Literacy Project, “as genetic materials, including organs, tissues and cells, as well as genetic information, such as the human genome and genes.”

The proposed guidelines also state that organizations and individuals outside of China, as well as groups formed or controlled by foreign stakeholders, cannot collect and preserve Chinese human genetic resources inside China or take them outside of the country. “The collection, storage and supply of Chinese human genetic resources must be carried out by Chinese scientific research institutions, universities, medical institutions and enterprises, it added.”

The proposal was presented by the Chinese Ministry of Science and Technology. It is currently in a public consultation phase. Last year, the country’s Biosecurity Law and Data Security Law both took effect.

For several decades, the U.S., Brazil, Japan and much of Europe have bolstered their management of human genetic resources. Chu Jiayou, former director of the Institute of Medical Biology of the [Chinese Academy of Medical Sciences](https://www.biospace.com/employer/550007/chinese-academy-of-medical-sciences/), said, “This subject has gradually become a field with global strategic importance.”

The new rules could potentially affect a broad range of scientific studies ranging from archaeology to agriculture to medicine. British law firm Simmons & Simmons suggests it could hamper international cooperation in biomedical research. The rules also define a foreign-controlled entity as any organization in which foreigners (outside China) hold more than 50% of equity or wield significant influence over decision-making, internal management and contracts or arrangements.

The draft emphasizes data security associated with human genetic resources. It appears to build on a regulatory framework on human genetic resources China issued in 2019 by the State Council, China’s Cabinet.

The chief scientist of a Tianjin-based biotech company who requested anonymity was quoted by China Daily, saying, “It is a very instructive and meticulous piece of regulation that will have a lasting impact on how bio-research will be conducted in China and with global partners. Bioethics regarding human genetic research has always been a pressing issue for the global biotechnology sector. I believe China’s latest effort to optimize its management of human genetic resources will ensure the positive growth of its bio-industry.”

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#### China threat overhyped– their biotech industry has been creating and complying with international norms

Master 21 (Farah Master, “Analysis: China’s biotech sector comes of age with big licensing deals, global ambitions”, Reuters, September 16th 2021, <https://www.reuters.com/world/china/chinas-biotech-sector-comes-age-with-big-licensing-deals-global-ambitions-2021-09-15/>, WC-NAS)  
HONG KONG, Sept 16 (Reuters) - If investors in China's biotech industry needed one more sign that the sector is coming of age, then a major licensing deal RemeGen Co Ltd [(9995.HK)](https://www.reuters.com/companies/9995.HK) struck last month with Seattle-based Seagen Inc [(SGEN.O)](https://www.reuters.com/companies/SGEN.O) fits the bill.

The agreement to co-develop cancer treatments using a RemeGen antibody drug conjugate is regarded as one of the biggest of its kind between a Chinese biotech and a Western firm. It provides for up to $2.4 billion in milestone payments, in addition to $200 million upfront as well as royalties if approved.

It is also at least the fifth out-licensing deal potentially worth more than $1 billion clinched by a Chinese biotech. Nearly all were signed in the past year, underscoring China's still small but growing role in developing innovative cancer drugs that will be used worldwide.

"China is clearly already an important and integral part of the global biopharma industry, not a separate ecosystem," said Franck Le Deu, senior partner at consultancy McKinsey in Hong Kong.

China's government has made cancer treatments a top priority for the industry. The world's most populous nation last year accounted for 30% of cancer deaths globally and 24% of newly diagnosed cases, according to one study.

Supportive policies for the sector over the past five years are also now bearing fruit and Western firms have come knocking at Chinese biotech doors.

For Seagen, the RemeGen deal will allow it to directly challenge breast cancer treatments from Roche Holding [(ROG.S)](https://www.reuters.com/companies/ROG.S) and AstraZeneca [(AZN.L)](https://www.reuters.com/companies/AZN.L)/Daiichi Sankyo [(4568.T)](https://www.reuters.com/companies/4568.T). The antibody also shows promise in tackling bladder and stomach tumours.

Other notable deals include a Novartis AG [(NOVN.S)](https://www.reuters.com/companies/NOVN.S) agreement worth up to $2.2 billion for a BeiGene Ltd [(6160.HK)](https://www.reuters.com/companies/6160.HK) drug. The two are co-developing an antibody similar to Keytruda from Merck [(MRK.N)](https://www.reuters.com/companies/MRK.N) and Opdivo from Bristol-Myers Squibb [(BMY.N)](https://www.reuters.com/companies/BMY.N) which help the immune system attack several different types of cancer and which have reaped billions of dollars in sales.

AbbVie [(ABBV.N)](https://www.reuters.com/companies/ABBV.N) has also partnered with I-Mab [(IMAB.O)](https://www.reuters.com/companies/IMAB.O) to co-develop a monoclonal antibody for several types of cancer in a deal worth up to $1.9 billion.

FLOURISHING ON FUNDING

Chinese biotechs have proliferated in a relatively short amount of time - a key catalyst being the return of overseas-trained Chinese scientists, dubbed "sea turtles", that began a decade ago and who have become increasingly attracted by domestic opportunities as the government pushes to develop the industry.

More recently, China in 2017 and 2018 aligned regulatory standards with international norms, rapidly speeding up the review system for new drugs. The sector also has seen a surge in funding after Hong Kong's stock exchange changed its rules in 2018 to allow listings of biotechs that have yet to earn revenue.

Success in the West is still fledgling - just three drugs developed in China which include BeiGene's Brukinsa for a type of non-Hodgkin's lymphoma - have been approved by the U.S. FDA.

### --xt Chinese Regs Better

#### China already has regs

Araz 20 [Sevan Araz, research intern with the Technology Policy Program at the Center for Strategic and International Studies in Washington, DC., 8-31-2020, “China Adopts Biotechnology Regulation, Amid Authoritarianism Concerns”, Center for Strategic and International Studies, https://www.csis.org/blogs/technology-policy-blog/china-adopts-biotechnology-regulation-amid-authoritarianism-concerns, accessed 6-22-2022]

China is gearing up to become a biotechnology powerhouse. Within the past five years the Chinese government is estimated to have invested over $100 billion in life sciences research and development. Further signaling its determination, Beijing is lavishing the sector with a host of fiscal incentives while state-backed entities dish out largesse to promising startups.

As biotechnologies rapidly proliferate, China—and other states—are rushing to develop regulatory and ethical frameworks. The COVID-19 pandemic has raised the urgency of such efforts. To set parameters for the evolving sector, Beijing has rolled out various initiatives.

In 2017, the Ministry of Science and Technology issued a series of regulatory measures to streamline the management of biotechnology research and development (R&D). Among the provisions was the establishment of the National Biotechnology Research and Development Safety Management Expert Committee. The advisory board draws from a broad swath of professionals: lawyers, economists, physicians, and biologists. The purview of the committee includes developing inspection practices, safety protocols and incident response guidelines.

Tepid efforts to rein in rogue biotechnology R&D were jolted by revelations of unethical gene-editing trials at the Shenzhen-based Southern University of Science and Technology. The affair, commonly referred to as the “CRISPR-baby scandal”, centered on the experimental endeavors of biophysicist He Jiankui. Applying the CRISPR–Cas9 gene-editing technique, He engineered mutations into human embryos in an attempt to confer resistance to HIV. The edited embryos were subsequently implanted into two recipients, resulting in several births. Following this disclosure in 2018, the scandal swept China and the globe, attracting public scrutiny and prompting a slew of ethical questions. Seeking to deter future bouts of frankensteining, Beijing set a firm precedent by indicting He for practicing illegal medicine. In 2019, a Chinese court condemned the infamous biophysicist with a three-year prison sentence, while two colleagues received lighter sentences. The long-awaited verdicts marked the end of the gripping saga. But the bioethical concerns kindled by the incident continue to reverberate.

He’s disregard for ethical principles for research involving human subjects spurred Chinese lawmakers to curb unfettered biomedical research. As part of the regulatory drive, the Chinese Ministries of Justice and Science and Technology released a revamped slate of codes for administering the use of human genetic resources—and associated data. The directives supersede earlier measures promulgated in 1998. The scope of the regulation package extends to the collection, preservation, utilization and export of Chinese human genetic resources. The rules, which came into effect in July 2019, also establish procedures for obtaining research approval. Compliance management is within the remit of provincial science and technical administrative departments, according to article four of the regulations.

While unveiling the genetic governance codes in March 2019, Justice Minister Fu Zhenghua and Science and Technology Minister Wang Zhigang touted the industrial advantages conferred by China’s demographic diversity. The cabinet members characterized vast, polyethnic gene pools as a critical asset in propelling Chinese life sciences ambitions. (Presently, Beijing is exploiting its genocide against Muslim minorities in Xinjiang to develop, field, and assess a bevy of novel, disturbing biotechnologies.)

In the course of the press conference, the ministers also revealed the government’s intention to establish genetic registries across select provinces, presaging the state-orchestrated gene harvesting campaigns roiling China, and Xinjiang in particular. The accumulated data is set to buoy Beijing’s bulging surveillance capabilities.

Later that March, the Ministry of Science and Technology rolled out fresh draft regulations for biotechnology R&D. The draft establishes a risk taxonomy—high, moderate or low risk—for assessing biotechnology activities. Compliance requirements are specified for each risk category. The document also proposes organizations adopt in-house governance measures. To this end, the draft lists a series of recommendations for institutions carrying out high-risk biotech R&D, including having a detailed outline of research plans and methods, instituting risk reduction measures, and creating emergency response strategies. Institutions are also instructed to set up biotechnology security commissions. These advisory committees are charged with supervising the implementation of the aforementioned policies. Intent to maintain tabs on its burgeoning biotechnology industry, Beijing required security commissions to register with local authorities.

Aiming to advance the ethical reckoning precipitated by the CRISPR-baby scandal, Beijing also launched the National Science and Technology Ethics Committee in July 2019. The committee is tasked with crafting uniform ethical standards for emerging technologies. To date, its primary focus areas are artificial intelligence and biomedicine.

The enduring COVID-19 crisis has also animated Chinese biosafety concerns—and resolve. While addressing a session of the powerful Central Comprehensive Deepening Reform Commission in February 2020, Chinese President Xi Jinping pushed for the rapid crafting of biosafety legislation and the establishment of biosecurity governance frameworks. Xi also harped on incorporating biosecurity tenets into China’s national security strategy.

Despite mounting a regulatory embrace, Beijing’s flagrant violation of bioethics casts doubt on its sincerity. As states navigate the fallout of the COVID-19 pandemic, global biotechnology norms are set to be the subject of greater discourse—and rivalry. Precedent suggests China may seek to set standards that are in its own national interest. Yet Beijing’s margin to influence emerging norms should be scrutinized and curtailed as a rebuke of its harrowing strand of biotech-driven authoritarianism.

#### China has better regs than the US

**Chin 21** [ Michael Chin, 2-10-2021, “China’s New PRC Biosecurity Law”, Simmons & Simmons, <https://www.simmons-simmons.com/en/publications/ckkz6vtxs14830a99h0xou5fo/china-s-new-prc-biosecurity-law>, accessed 6-28-2022]

Against the background of the outbreak of COVID-19, the Standing Committee of the PRC National People's Congress fast tracked the passing of the PRC Biosecurity Law ("Biosecurity Law") on 17 October 2020 with the law to take effect on 15 April 2021.

The Biosecurity Law seeks to cover a wide range of areas under a broad definition of "biosecurity" and in doing so brings together an existing piece meal set of regulations in the following areas: epidemic control of infectious diseases for humans, quarantines for animals and plants; research, development, and application of biology technology; establishment and security of pathological microorganism labs; administration of human genetic resources and biological resources; and prevention of bioterrorism and defending threats of biological weapons.

Specifically and of importance to international players, the Biosecurity Law further reinforces the importance China places on the administration of human genetic resources ("HGR") by asserting sovereignty over China's HGR and further strengthening current regulation over the collection, preservation, use and provision of China's HGR under the existing Regulation on the Administration of Human Genetic Resources ("HGRAC Regulation", issued by State Council on 10 June 2019 and which took effect on 1 July 2019).c

The Biosecurity Law adopts the same legal principles as provided in the HGRAC Regulation (which remains effective unless expressly amended by the Biosecurity Law) but introduces the following noteworthy changes:

The HGRAC Regulation stipulates that prior approval of the Ministry of Science and Technology of State Council ("MOST") is required for the collection, preservation, utilization and provision to foreign parties of China's HGR. However the Biosecurity Law further narrows the scope of permitted exemptions from this prior approval requirement. For example, training is no longer a permitted exemption.

Both the Biosecurity Law and the HGRAC Regulation prohibits foreign persons from collecting or preserving HGR in China, or transferring China's HGR abroad, however foreign persons have limited rights to carry out scientific research activities in collaboration with Chinese parties using HGR as approved by MOST. However, for permitted international scientific research collaboration activities with Chinese parties based on HGR in China, the Biosecurity Law specifies that the Chinese parties can participate in the research throughout the entire process and in an essential way.

Legal liabilities and penalties are drastically increased under the under the Biosecurity Law when compared with the HGRAC Regulation. For example, where illegal income is equal to or greater than RMB 1 million violators can be subject to fines of up to 20 times the illegal income and the authorities have the power to impose suspension orders of up to 5 years as well as revoke operation permits and licenses.

Another significant development of the Biosecurity Law is the introduction of an approval and recordal system for biotechnology R&D and application. Specifically, it categorises biotechnology R&D activities into high, medium or low risk categories determined based on the risk of harm to public health, industrials, agriculture and ecology. Foreign entities are prohibited from conducting high or medium risk biotechnology R&D activities in China; in other words they will need to be conducted by a legal entity in China and obtain the necessary approval or recordal. Further details are still to be released.

### --AT: US Lead Key

#### China places strict tech regs *and* doesn’t model US ones

AIQ 21 (AIQ Editorial, “China’s Big Tech crackdown”, Aviva Investors, July 5th 2021, <https://www.avivainvestors.com/en-gb/views/aiq-investment-thinking/2021/07/china-big-tech/>, WC-NAS)

For many years, Beijing took a hands-off approach to the technology sector, willing to countenance the rapid growth of national champions that provided convenient services to the population at home and commanded respect on the world stage. But now **the government has changed tack, and for reasons that differ from those driving recent regulatory moves in the West.**

“Regulation of technology companies is tightening everywhere – it’s a global trend. In practice, though, Chinese tech firms were already under much more state influence than their counterparts in the US or Europe. What we are seeing is more of a shift in emphasis from the authorities,” says Alistair Way, head of equities at Aviva Investors.

“Beijing is trying to balance the interests of China’s national tech champions with its own policy objectives. The factors behind this regulatory tightening are threefold: The first is political, about affirming who’s in charge; the second is economic, and has to do with stabilising the financial system; the third is the antitrust element, motivated by concerns over competitiveness.”

Start with the politics. The clampdown on tech giants can be seen to reflect the all-powerful central government under President Xi Jinping, who has cemented control over the Communist Party and the state since constitutional term limits on his office were abolished in 2018.

Xi has long been uncomfortable with the power wielded by billionaire entrepreneurs such as Ma. At the G20 Summit in Hangzhou in 2016, visiting dignitaries divided their time between conferences with Xi and audiences with Ma at Alibaba’s headquarters, reportedly angering the president, who felt upstaged.7

Tech firms’ sway over media platforms is a particular bone of contention. Pro-Ant editorials on Alibaba-owned business websites have been taken down in recent months, while Alibaba has also been criticised for censoring gossip about its executives on social media. As the state-run People’s Daily put it in a recent article on the subject: “It’s astonishing how powerful [Alibaba] is in forming public opinion.”8

### --xt No China Model

#### China will not model US policy

Ho 21 [ Benjamin Ho, assistant professor in the China Programme at the Institute of Defense and Strategic Studies at the S. Rajaratnam School of International Studies, 8-25-2021,”Why China Will Not Cooperate with the West: The Pandemic Made Things Worse”, The National Interest, <https://nationalinterest.org/feature/why-china-will-not-cooperate-west-pandemic-made-things-worse-190251?page=0%2C1>, accessed 6-28-2022]

Seen this way, it is not surprising that China fundamentally does not trust the United States. Not only does Beijing see Washington’s objective as wanting to keep it down and preserving its international primacy, it also views the current Biden administration—and its emphasis on democracy promotion—as an existential threat to its political worldview. Indeed, Western criticisms of Beijing on Xinjiang, Hong Kong, and Tibet all feed into the CCP’s central narrative: the United States and the West want to challenge the Party’s grip on power and to remake China in the image of the West. Such a siege mentality means that Beijing is unlikely to find any common ground with the United States insofar as key strategic interests are concerned. Consequently, the CCP also views statements made by the United States and the West as trying to drive a wedge between itself and its citizens—which would effectively destroy its sacralized image and its paramount leader that has been so carefully and painstakingly built up over the years. Indeed, Chinese political observers—in their recount of the fall of the Soviet Union—often point not to Mikhail Gorbachev’s glasnost and perestroika, rather they attribute it to Nikita Khrushchev’s denouncement of Stalin as the start of the Soviet long decline. Unity is paramount to preserving the sacralized image of the party, and the CCP will go all out to defend this.

The events of the coronavirus pandemic have further exacerbated the tensions between China and the United States, not least because of the sky-high implications that are at stake. Given that China wants to portray itself as a responsible nation, one that is better than the West, it has spared no effort to promote its vaccines worldwide, particularly in countries who for various reasons are unable to procure the Pfizer or Moderna vaccines. While most foreign ministers would prefer to defer knowledge of vaccine science to health experts, in China, the foreign ministry has been on the forefront of vaccine promotion. The implications are obvious: Beijing sees vaccine diplomacy as a crucial means with which to convince other countries of its goodwill and friendship. Paired together with its Wolf Warrior diplomacy, in which China seeks to rebut what it sees as unfair allegations by unfriendly nations, Beijing intends to seize the moral high ground to claim that it is superior to the West.

To this end, it is likely that Chinese leaders are aware that it is being perceived somewhat in a negative light by its neighbors and they see the need to remedy it. In a June 2021 politburo study session, Xi exhorted party leaders to have better international communication in order to repair the country’s coronavirus-hit image and to win a battle of narratives with the United States and its allies. This is vital for China especially in terms of cross-strait relations which are presently at a low and which the possibility of conflict between Beijing and Taipei cannot be ruled out. Indeed, if war happens, China would have to demonstrate that it is the victim—either as a result of Taiwan’s intransigence—or because of the United States interfering in its internal affairs. While most countries in the region are unlikely to want to be drawn into a hot conflict (with the exception of Japan), the more China is able to present a positive image of itself, the more likely it is able to convince its neighbors of its just cause (jus bellum justum). This would increase both regional and international pressure on the United States not to put boots on the ground and thus further isolate Taipei from any external support.

### 1NC – No Tech Race

#### China and American biotech can develop cooperatively.

Moore and Coplin 22 (Scott Moore and Abigail Coplin, “Closing the U.S. to Chinese Biotech Would Do Far More Harm Than Good”, China File, April 8th 2022, <https://www.chinafile.com/reporting-opinion/viewpoint/closing-us-chinese-biotech-would-do-far-more-harm-good>, WC-NAS)

China is fast becoming a biotechnology powerhouse and a perceived threat to the longstanding dominance of the United States in the sector. In Washington, these developments have been greeted in much the same way as China’s growing prowess in artificial intelligence and other emerging technologies: with panic and punitive measures. Last May, Florida Republican Senator Marco Rubio introduced the [Genomics Data Security Act](https://www.govinfo.gov/content/pkg/BILLS-117s1744is/pdf/BILLS-117s1744is.pdf), which would, among other actions, ban the National Institutes of Health from funding China-affiliated entities. In September, Arkansas Republican Senator Tom Cotton and Wisconsin Representative Mike Gallagher [called](https://www.cotton.senate.gov/imo/media/doc/bgi_letter.pdf) for “[blacklisting](https://www.cotton.senate.gov/imo/media/doc/bgi_letter.pdf)” Chinese biotechnology companies over concerns they may be attempting to gather biomedical information on U.S. citizens for nefarious purposes. Just a few months later, the U.S. government [sanctioned](https://public-inspection.federalregister.gov/2021-27406.pdf) 12 Chinese life sciences research institutes and 22 private firms on security grounds.

There is a big problem, however, with these largely reactive, security-focused responses. Biotechnology is an intrinsically transnational and rapidly evolving sector that holds just as much promise for mutually beneficial collaboration and cooperation as for competition and contention. These distinctive characteristics of biotechnology mean that Washington’s security-driven approach to China and biotechnology risks harming U.S. competitiveness in the sector instead of enhancing it, while also limiting America’s ability to share in the development of mutually-beneficial technologies and work with Beijing to address the shared challenges posed by rapid developments in fields like gene editing. U.S. policy and strategy on China and biotechnology must strike a better balance between addressing legitimate concerns while maintaining the openness and innovation that underpin America’s competitive advantage in emerging technology.

Washington’s recent focus on China and biotechnology reflects the sector’s rapid growth, both in China and elsewhere. Biotechnology has been a focus of Beijing’s scientific and technological development plans since the 1980s, but more recently, [ambitious policy goals](https://www.brookings.edu/research/chinas-role-in-the-global-biotechnology-sector-and-implications-for-us-policy/) have spurred sharp increases in public and private investment into the sector. Estimates of [state investment](https://www.brookings.edu/research/chinas-role-in-the-global-biotechnology-sector-and-implications-for-us-policy/) in the [biotechnology sector](https://www.nature.com/articles/%20d41586-018-00542-3) over the past decade reach as high as $100 billion. In a [2020 speech](https://www.rfi.fr/cn/%E4%B8%AD%E5%9B%BD/20200916-%E4%B9%A0%E8%BF%91%E5%B9%B3%E4%BF%83%E7%94%9F%E7%89%A9%E7%A7%91%E6%8A%80%E8%A6%81%E8%87%AA%E5%B7%B1%E6%8E%8C%E6%8F%A1-%E7%94%A8%E4%B8%BE%E5%9B%BD%E4%BD%93%E5%88%B6%E7%AA%81%E7%A0%B4%E6%8A%80%E6%9C%AF), Xi Jinping himself called for China to “master” biotechnology and mount a “society-wide effort” to achieve breakthroughs in the field. The life sciences, Xi went on to say, could be a “national treasure” that China must “seize with its own hand.”

Yet such statements belie the ways biotechnology differs from other fields. Biotechnology intrinsically blurs boundaries between science and commerce, market and state, the global and the national, and even personal privacy and collective interest. Progress [depends](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.196.4322&rep=rep1&type=pdf) more heavily in biotech than in other high-tech industries on knowledge networks and transnational collaboration, [especially](http://science.sciencemag.org/content/356/6339/696.2.abstract) those that connect the United States and China.

A raft of studies on scientific and technological innovation conducted over the past two decades demonstrate that the ability of individual researchers to collaborate with firms and institutions in different countries significantly increases the quality of their work, especially when the collaboration is [between](https://www.science.org/doi/10.1126/science.aan5197) U.S. and Chinese researchers, and especially in the [field of biotechnology](https://www.google.com/imgres?imgurl=https%3A%2F%2Fi1.rgstatic.net%2Fpublication%2F324472765_Mapping_microbiology_with_scientometrics_help_provide_a_clearer_vision_of_microbiology_research_around_the_globe%2Flinks%2F5ad5e29da6fdcc2935813414%2Flargepreview.png&imgrefurl=https%3A%2F%2Fwww.researchgate.net%2Fpublication%2F324472765_Mapping_microbiology_with_scientometrics_help_provide_a_clearer_vision_of_microbiology_research_around_the_globe&tbnid=MKhzUMjj6spg0M&vet=12ahUKEwi-7POBmrn1AhVpqHIEHV-tCgwQMygAegQIARAb..i&docid=h7ZYVjrdFWTxWM&w=850&h=1118&itg=1&q=Marcio%20L.%20Rodrigues%2C%20Leonardo%20Nimrichter%2C%20and%20Radames%20Cordero%2C%20%22The%20Benefits%20of%20Scientific%20Mobility%20and%20International%20Collaboration%2C%22%20FEMS%20Microbiology%20Letters%20363%20(2016)%3A%201-5&ved=2ahUKEwi-7POBmrn1AhVpqHIEHV-tCgwQMygAegQIARAb). COVID-19 vaccines likewise provide a powerful example of how U.S.-China knowledge networks help translate basic biotech research into commercial and medical applications. One of the key innovations underpinning the development of Pfizer’s and Moderna’s mRNA vaccines—the stabilization of the coronavirus spike protein—[stemmed](https://www.thisamericanlife.org/727/transcript) from the research of Dr. Wang Nianshuang, a graduate of China’s Tsinghua University studying on a postdoctoral fellowship in the lab of Dr. Jason McLellan at the University of Texas at Austin.

Even in the realm of commercial biotechnology, the U.S. and Chinese biotechnology sectors are more complementary than competitive. Many [U.S.](https://bioduro-sundia.com/) and [Chinese](https://www.beigene.com/en-us) biotech firms employ transnational business models that leverage the very different strengths of the American and Chinese biotechnology ecosystems, while many others—like BeiGene and Edigene—were essentially “born global.” Chinese biopharmaceutical companies [harness](https://www.thewirechina.com/2021/10/10/biotechs-borders/) China’s large population of patients to conduct time- and cost-efficient clinical trials that help inform U.S. regulatory approvals. Cancer drugs developed by Chinese firms show [considerable promise](https://www.wsj.com/articles/china-biotechs-lure-industry-talent-in-the-u-s-11560690000) in lowering prices and [offering](https://www.businesswire.com/news/home/20210617005128/en/BeiGene-Announces-First-Patient-Dosed-in-Global-Phase-3-Trial-of-Anti-TIGIT-Antibody-Ociperlimab-in-Non-Small-Cell-Lung-Cancer) new treatment options to patients in the U.S. and elsewhere. Likewise, Chinese, American, and European firms all regularly [license](https://static1.squarespace.com/static/5a9c785b70e80290e8ec1399/t/61f813b3ce78756a23b47880/1643647923437/220129+Press+Release_EdiGene+Arbor_FINAL.pdf) each other’s technologies and [drugs](https://www.reuters.com/business/healthcare-pharmaceuticals/novartis-options-beigene-anti-cancer-therapy-1-billion-deal-2021-12-20/) as part of their technological development and marketing strategies. The corporate c-suites and scientific advisory boards of individual firms likewise often consist of individuals of multiple nationalities with experience working in both American and Chinese contexts. Ultimately, in both academic research and commercial science, the division between American and Chinese biotechnology is less clear and less meaningful than in other high-tech fields.

Biotechnology’s reliance on basic science and transnational knowledge networks also means that competition in biotechnology plays out differently than it does in other high-tech industries. Unlike the semiconductor and telecommunication sectors, whose development depends on expensive equipment and hard-to-acquire manufacturing expertise, barriers to entry in biotechnology are low. Likewise, as Eric Lander’s now infamous [mapping](https://www.cell.com/action/showPdf?pii=S0092-8674%2815%2901705-5) of CRISPR’s development illustrates, both foundational research and key innovations in biotechnology often take place in the public domain and build on incremental advancements made across the globe. When breakthroughs, like employing CRISPR as a means of gene-editing, do occur they [spread](https://www.science.org/content/article/its-crispr-revolution-china-becomes-world-leader-genome-editing) through global scientific networks with little heed for national boundaries. Consequently, it is not a zero-sum industry in which a single innovation sets any firm or country ahead for a prolonged period. Take mRNA vaccines as an example. Not only did Moderna and the international Pfizer-BioNTech collaboration concurrently develop mRNA vaccines, China is also currently finishing up phase three trials for its own mRNA vaccine. In contrast to the Moderna and Pfizer-BioNTech vaccines, however, the [Walvax-Suzhou Abogen-PLA Academy of Military Science vaccine](https://www.reuters.com/business/healthcare-pharmaceuticals/chinas-mrna-covid-vaccine-candidates-2022-02-28/) is [thermostable](https://www.mdpi.com/2076-393X/9/9/1033/htm) at room temperature for seven days—a key advantage when trying to vaccinate the developing world against COVID-19 and other diseases.

Given these dynamics, the restrictive policy tools under discussion in Washington pose serious risks to U.S. competitiveness in the sector. While policymakers [frame](https://www.bloomberg.com/news/articles/2021-05-26/biden-s-asia-czar-says-era-of-engagement-with-xi-s-china-is-over) “engagement” and “competition” as opposing modalities of contending with China’s technological rise, maintaining an innovative edge in biotechnology requires staying plugged in to international scientific networks and engaged with one’s competitors, regardless of whether they are domestic or international. This is, after all, part of why the biotechnology industry tends [to develop](https://journals.sagepub.com/doi/pdf/10.2189/asqu.2009.54.1.90?casa_token=iY9A77rxPmcAAAAA%3ArqTDJTJ4H9FB3uQwrQci_8p7mH8WETKMqQLbwcdo5oalT75AMdxAt8NHItvNrEHTTg-Qz87jg_J00g&) in clusters. Similarly, [Japan’s ongoing struggle](https://www.sup.org/books/title/?id=24171) to grow its biotechnology industry, given its [low level of integration](https://commercialbiotechnology.com/index.php/jcb/article/view/837) into global clinical research networks, highlights the potential perils of constricting U.S.-China knowledge networks in the sector. Blocking Chinese biotechnology companies from entering American markets is unlikely to impede China’s emergence as a major player in the industry, but it does threaten to prevent American firms and researchers from accessing the talent, ideas, and technologies these firms have to offer. To decouple is to risk missing out, and thus risk falling behind.

## DA - Turkey

### 2NC – Biotech Bad

#### Turkey eager to integrate biotech – health sector provides an entryway into industry

Sevinc et al '20 – staff writer at Anadolu Agency. [Hanife., Zeynep Rakjpoglu, Guc Gonel. “Turkey eager to invest in biotech.” Anadolu Agency. 7/3/2020. <https://www.aa.com.tr/en/science-technology/turkey-eager-to-invest-in-biotech/1758137>]

**ANKARA**

Turkey's progress in the health sector is strategically critical beyond its economic significance, the Turkish president said on Saturday.

Congratulating the award recipients of the international biotechnology congress BIO Turkey in Istanbul, Recep Tayyip Erdogan in a letter stressed the importance of the pharmaceutical industry for Turkey

Erdogan underlined that the sector was the most important after the defense industry, emphasizing that during difficult times Turkey could only rely on its own production and infrastructure to survive.

"However, we have unfortunately faced veiled resistance in our steps to develop our domestic and national pharmaceutical industry and strengthen our medical device sector, just as we once had in the defense industry," he said.

Attending the ceremony, Vice President Fuat Oktay said that Turkey would act against "approaches" that sought to compel domestic ventures to move abroad even as the government attempted to bring research and development, design and production facilities into the country.

Inviting scientists, non-governmental organizations and universities to support Turkey's biotechnology initiatives, Oktay said investments in the defense, health and food industries would "not only save us from dependency but also turn Turkey into a global exporter."

Health Minister Fahrettin Koca also spoke at the ceremony, underscoring the role of partnerships between academia, industry and individual projects in training a qualified labor force.

After his speech, Koca presented a plaque of appreciation to the representatives of the congress's sponsors.

### 2NC – Human Rights

#### Turkey is horrible for human rights – lack of judicial independence and authoritarian rule greenlight violence is Syria, Kurds

HRW 21 – Human Rights Watch, International NGO that exposes and studies human rights violations and petitions for governmental action [HRW. “World Report 2021: Turkey.” Human Rights Watch. 2021. <https://www.hrw.org/world-report/2021/country-chapters/turkey>]

The assault on human rights and the rule of law presided over by Turkey’s President Recep Tayyip Erdoğan continued during the Covid-19 pandemic. The president’s Justice and Development Party (AKP) and an allied far-right party enjoy a parliamentary majority enabling them to consolidate authoritarian rule by passing rushed legislation that contravenes international human rights obligations. Opposition parties remain sidelined under Turkey’s presidential system and the government has reshaped public and state institutions to remove checks on power and to ensure benefits for its own supporters. The political opposition nevertheless controls the municipalities of Istanbul and Ankara.

Executive interference in the judiciary and in prosecutorial decisions are entrenched problems, reflected in the authorities’ systematic practice of detaining, prosecuting, and convicting on bogus and overbroad terrorism and other charges, individuals the Erdoğan government regards as critics or political opponents. Among those targeted are journalists, opposition politicians, and activists—in particular members of the pro-Kurdish Peoples’ Democratic Party (HDP). The largest targeted group consists of those alleged to have links with the movement headed by US-based Sunni cleric Fethullah Gülen which Turkey deems a terrorist organization and calls FETÖ and holds responsible for the July 2016 coup attempt.

Turkey’s move to begin gas exploration in the East Mediterranean in the context of maritime boundaries contested with Greece and Cyprus almost spiraled into a naval clash with Greece in August. The European Union has made efforts to broker dialogue over conflicting claims in a dispute originally ignited by the discovery of gas reserves off Cyprus with its contested status.

Turkey provides military support to the United Nations-recognized Government of National Accord in Libya against a breakaway government in the east of the country. Turkey has expressed strong support for Azerbaijan in its conflict with Armenia over Nagorno-Karabakh. Turkey continues to exert effective control via Syrian non-state actors over areas of northern and northeast Syria where it has intervened militarily in the past four years, and where significant human rights abuses continue unabated. Turkey cites its aim as removing Kurdish forces formerly controlling the area closely linked to the armed Kurdistan Workers’ Party (PKK) with which Turkey has been engaged in a decades’-long conflict (see Syria chapter). Turkey played a key role in securing a March ceasefire in Syria’s northwestern Idlib governorate, which has largely held.

#### Turkey cracks down on freedom of speech – undermines democracy

HRW 21 – Human Rights Watch, International NGO that exposes and studies human rights violations and petitions for governmental action [HRW. “World Report 2021: Turkey.” Human Rights Watch. 2021. <https://www.hrw.org/world-report/2021/country-chapters/turkey>]

Freedom of Expression, Association, and Assembly

Most TV and print media in Turkey are owned by companies close to the Erdoğan presidency or avoid reporting critical of the government. Critical online news and commentary websites persist, nevertheless. At the time of writing, an estimated 87 journalists and media workers were in pretrial detention or serving sentences for terrorism offenses because of their journalistic work.

Plans for strict regulation of social media companies in Turkey were made law in July after President Erdoğan used the example of insults against his family on social media to justify a need for stricter regulation. Under the new law, social media companies with over one million users a day will be required to have offices in Turkey and comply with government demands to block and remove content or else face very heavy fines. Companies that do not open an office will be fined and eventually have their bandwidth restricted, rendering the platform unusable. At time of writing, Facebook had indicated it would not comply with the law.

While Turkey in January lifted a blocking order on Wikipedia in place since April 2017, authorities continue to block thousands of websites, including critical news websites, and order the removal of online content.

Thousands of people face arrest and prosecution for their social media posts, typically charged with defamation, insulting the president, or spreading terrorist propaganda. In the context of Covid-19, the Interior Ministry announced that hundreds of people were under criminal investigation or detained by police for social media postings deemed to “create fear and panic” about the pandemic. Some of these postings included criticism of the government’s response to the pandemic.

Turkey’s official media regulation authority, the Radio and Television Supreme Board (RTÜK), ordered arbitrary fines and temporary suspensions of broadcasting of media outlets such as Halk TV, Tele 1 TV, and Fox TV, which include content critical of the government. Netflix complied with RTÜK’s April demand that it remove an episode of TV drama series Designated Survivor on the grounds that it offered a negative portrayal of President Erdoğan, as well as in July canceling filming in Turkey of a new Turkish drama after RTÜK requested the removal of a gay character from the script.

Selectively using Covid-19 as a pretext, provincial governors banned peaceful protests of women’s rights activists, healthcare workers, lawyers, and political opposition parties.

Terrorism charges continue to be widely misused to restrict the rights to free expression and association in the fourth year after the coup attempt. As of July 2020, Ministry of Justice and Interior figures stated that 58,409 were on trial and 132,954 still under criminal investigation on terrorism in cases linked to the Gülen movement. Of those 25,912 were held in prison on remand.

There are no published official numbers of prisoners held on remand or convicted for alleged links with the PKK, although on the basis of the previous years’ figures the number is at least 8,500 and includes elected politicians and journalists. An April law on early prisoner release to reduce crowding in the context of the Covid-19 pandemic excluded remand prisoners and all prisoners detained or convicted of terrorism offenses. Covid-19 cases have been reported in prisons throughout Turkey, although authorities do not provide numbers of confirmed cases.

Human Rights Defenders, Lawyers

In February, an Istanbul court acquitted rights defender Osman Kavala and nine others of “attempting to overthrow the government by force and violence” in connection with the 2013 mass protests which began in Gezi Park. However, hours after his acquittal another court ordered Kavala’s detention in the scope of an investigation into his alleged role in the July 2016 attempted coup. In October, the investigation culminated in another bogus indictment accusing Kavala and US academic Henri Barkey of attempting to overthrow the constitutional order and espionage. Kavala has been detained since November 2017, with Turkey flouting a European Court of Human Rights’ judgment ordering his release on the grounds that his detention has been pursued for political aims.

In July, in a case against human rights defenders detained in 2017 while they attended a training workshop, an Istanbul court convicted Taner Kılıç, Amnesty International Turkey’s honorary chair, on charges of membership of a terrorist organization to over six years in prison. İdil Eser, Amnesty Turkey’s former director, and rights defenders Özlem Dalkıran and Günal Kurşun received sentences of 25 months on charges of aiding a terrorist organization, and 7 others, 2 of them foreign nationals, were acquitted. All are at liberty and the case is under appeal.

The government’s restrictive approach to the public activities of lesbian, gay, bisexual, and transgender (LGBT) rights groups continued with the banning of events including Pride marches for a sixth year running and homophobic speeches by senior state officials.

The government in July passed a new law to reduce the institutional strength of Turkey’s largest bar associations, which have strongly criticized Turkey’s backsliding on human rights and the rule of law. Defense lawyers representing defendants in terrorism prosecutions have faced arrest and prosecution on the same charges as their clients. In September, the Court of Cassation upheld the conviction of 14 out of 18 lawyers for links with an outlawed leftist organization. One of the lawyers, Ebru Timtik, died on August 27 after a prolonged hunger strike in demand of a fair trial.

The first hearing against three police officers and a PKK militant accused of the fatal shooting of human rights lawyer Tahir Elçi on November 28, 2015, began in October with further hearings postponed until March 2021.

From May to July, at least 45 Kurdish women’s rights activists were detained and face prosecution for links with the PKK. Femicide and domestic abuse are significant problems in Turkey. While official disaggregated data on numbers are not available, women’s rights groups have reported that hundreds of women are killed annually as a result of domestic violence. Conservative groups and some government officials suggested Turkey may withdraw from the Council of Europe Convention on Preventing and Combatting Violence against Women and Domestic Violence (the Istanbul Convention), which Turkey was among the first to ratify in 2014.

#### Torture, police brutality, and poor prison conditions undermine human rights

HRW 21 – Human Rights Watch, International NGO that exposes and studies human rights violations and petitions for governmental action [HRW. “World Report 2021: Turkey.” Human Rights Watch. 2021. <https://www.hrw.org/world-report/2021/country-chapters/turkey>]

Torture and Ill-Treatment in Custody, Enforced Disappearances

A rise in allegations of torture, ill-treatment, and cruel and inhuman or degrading treatment in police and military custody and prison over the past four years has set back Turkey’s earlier progress in this area. Those targeted include people accused of political and common crimes. Prosecutors do not conduct meaningful investigations into such allegations and there is a pervasive culture of impunity for members of the security forces and public officials implicated.

There have been no effective investigations into the around two dozen reported cases of enforced disappearance over the past four years. In February and June 2020, two men out of six who resurfaced in police custody in Ankara months after disappearing in February 2019, stated in court hearings that they had been abducted, tortured, and forced to sign statements confessing to links with the Gülen movement.

In June, the government passed legislation to increase the numbers and powers of night watchmen who assist the police with community policing functions, granting them authority to stop and check IDs and to use lethal force. There have been reported instances of watchmen abusing their powers and ill-treating people.

The European Committee for the Prevention of Torture (CPT) has conducted three visits to Turkey since the July 2016 coup attempt. In August, the Turkish government granted permission for publication of two of the CPT reports from 2017 and 2019 visits identifying ill-treatment in police custody and degrading conditions and overcrowding in prisons.

Kurdish Conflict and Crackdown on Opposition

While sporadic armed clashes between the military and the armed Kurdistan Workers’ Party (PKK) occur in Turkey’s eastern and southeastern regions, the focus of the conflict is in the Kurdistan Region of Iraq, where Turkey conducts regular cross-border operations and airstrikes against PKK targets, in some cases killing and injuring civilians.

The Erdoğan government refuses to distinguish between the PKK and the democratically elected Peoples’ Democratic Party (HDP) which won 11.7 percent of the national vote in the 2018 parliamentary elections and 65 local municipalities in the 2019 local elections. Former party co-chairs Selahattin Demirtaş and Figen Yüksekdağ have been in detention since November 2016. Turkey has refused to comply with a 2020 European Court of Human Rights ruling that Demirtaş should be immediately released.

Since August 2019, the Interior Ministry has justified the removal of 48 elected Peoples’ Democratic Party (HDP) mayors on the basis that they face criminal investigations and prosecutions for links with the PKK. Repeating the approach taken in 2016-17, the government has replaced mayors in the southeast with Ankara-appointed provincial governors and deputy governor “trustees.”

At time of writing, 19 mayors remain in pretrial detention. In March, a Diyarbakır court sentenced Adnan Selçuk Mızraklı, the dismissed mayor of Diyarbakır Metropolitan Municipality, to over nine years in prison based on a witness statement accusing him of links with the PKK. The case is under appeal. In October, an Ankara court ruled for the pretrial detention of Kars mayor, Ayhan Bilgen, and 16 other HDP officials, in connection with an investigation into their alleged role in 2014 protests.

In June, the Turkish parliament revoked the parliamentary seats of two HDP deputies, Leyla Güven and Musa Farisoğulları, on the grounds that the Court of Cassation had upheld convictions against them for membership in a terrorist organization, and Enis Berberoğlu, a deputy from the main opposition Republican People’s Party, for revealing state secrets by sharing video footage of trucks of weapons being transferred to Syria with Cumhuriyet newspaper.

In June, an Istanbul appeal court upheld the conviction of Canan Kaftancıoğlu, Istanbul chair of People’s Republican Party (CHP), to nearly 10 years in prison for tweets she made years ago. A further appeal is underway.

Refugees and Migrants

Turkey continues to host the world’s largest number of refugees, around 3.6 million from Syria, and over 400,000 refugees and migrants from Afghanistan, Iraq, and other countries. On February 27, 2020, Turkey announced that authorities would not intercept asylum seekers wishing to leave Turkey through its borders with the European Union.

As a result, thousands of migrants and asylum seekers gathered at the Turkish-Greek border. Many of those that managed to cross the Evros River into Greece were summarily and violently pushed back by Greek security forces. The onset of the Covid-19 pandemic prompted Turkey to close the border again, but attempted crossings by migrants of land and sea borders and pushbacks from Greece continued.

At least 60 Afghans and others died after entering Turkey from Iran and crossing Lake Van in the eastern part of the country in a fishing boat. The border with Syria has been closed to new asylum seekers since 2016; Turkish border guards have killed or injured some of those attempting to cross and carried out mass summary pushbacks.

#### Strained relationship with US prevents modeling and cooperation

HRW 21 – Human Rights Watch, International NGO that exposes and studies human rights violations and petitions for governmental action [HRW. “World Report 2021: Turkey.” Human Rights Watch. 2021. <https://www.hrw.org/world-report/2021/country-chapters/turkey>]

Key International Actors

Turkey’s relationship with the European Union was strained by tensions in the East Mediterranean over contested maritime borders and access to gas reserves, as well as by Turkey’s willingness to use migration as a political bargaining tool by briefly opening its border to Greece in February-March. Turkey formally remains a candidate for EU accession without expectation on either side of progress towards its membership.

In its Turkey report in the context of the accession process, the EU Commission stressed the “continued deterioration of democracy, the rule of law, fundamental rights and the independence of the judiciary … with further backsliding in many areas.” The EU made a number of statements on negative developments, criticizing in February the re-arrest of Osman Kavala, and in July, the conviction of rights defenders including Taner Kılıç.

Turkish-US relations remain strained for multiple reasons, including the presence on US soil of Fethullah Gülen, US support for Kurdish-led forces in Syria, Turkey’s acquisition of Russian S-400 missiles, and the forthcoming New York trial of a state-owned Turkish bank for Iran sanctions-busting and money laundering.

In June and October, Istanbul courts convicted two local employees of the US consulate in Istanbul on terrorism charges, imposing prison sentences ranging from five to nearly nine years because the employees had prior professional contact, years earlier, with police officers later accused of being Gülenists.

In a February report, the Council of Europe Commissioner for Human Rights focused on measures by authorities that have had “devastating consequences” for judicial independence and “unprecedented levels of disregard for the most basic principles of law” in terrorism prosecutions. Following the review of Turkey’s human rights record by UN member-states in the context of the Universal Periodic Review, Turkey rejected core recommendations regarding its human rights record or claimed that it had already implemented them.

## DA - Hungary

### 2NC – Human Rights

#### COVID decimated rule of law and democratic institutions – democratic backsliding amplifies human rights abuses

HRW 21 – Human Rights Watch, International NGO that exposes and studies human rights violations and petitions for governmental action [HRW. “World Report 2021: Hungary.” Human Rights Watch. 2021. https://www.hrw.org/world-report/2021/country-chapters/hungary]

The government used the Covid-19 pandemic as a pretext to continue its attacks on rule of law and democratic institutions. The government declared a state of emergency in March, seizing unlimited power to rule by decree without parliamentary and judicial review. Before the state of emergency was revoked in mid-June, the government had issued hundreds of decrees, including on issues unrelated to public health. The government made access to asylum close to impossible, interfered with independent media and academia, launched an assault on members of the lesbian, gay, bisexual, and transgender (LGBT) community, and undermined women’s rights. Hungary’s Roma minority continue to face widespread and systemic discrimination.

In its Rule of Law report released in October, the European Union Commission raised concerns about the lack of independence of the judiciary, intimidation of independent media, and the impact of the weakening of independent institutions and pressures on civil society on democratic checks and balances.

Hungarian Prime Minister Viktor Orban

Attacks on Rule of Law

In March, the government declared a state of emergency in response to the pandemic and the parliament, where the ruling party has a two-thirds majority, passed an Authorization Act giving the government unlimited power to rule by decree indefinitely and without parliamentary oversight. The law also included a new criminal offense for the publication of “fake” or “distorted facts” pertaining to the pandemic.

The government adopted hundreds of decrees before the Authorization Act and state of emergency were revoked in mid-June, including several unrelated to public health, such as decrees that stripped funds to municipalities, disproportionally affecting localities ruled by opposition parties. The ruling Fidesz party had suffered a major blow in the October 2019 local elections when the party lost 10 larger cities to the opposition, including the capital city, Budapest.

While the Authorization Act was revoked in mid-June, Parliament simultaneously adopted a new law enabling the government to declare future public health or medical emergencies during which it could order any and all measures it deems necessary without parliamentary approval, including suspending laws and curtailing fundamental rights such as freedom of movement and assembly for six months. These powers are renewable every six months with minimal or no parliamentary or judicial oversight.

#### Attacks on independent media and academic freedom undermine public democratic checks – allows human rights abuses

HRW 21 – Human Rights Watch, International NGO that exposes and studies human rights violations and petitions for governmental action [HRW. “World Report 2021: Hungary.” Human Rights Watch. 2021. https://www.hrw.org/world-report/2021/country-chapters/hungary]

Freedom of Media

The government continued its attacks on media and freedom of expression. Most media outlets are directly or indirectly controlled by the government, which has a chilling effect on independent journalism. Between March and June, daily online government coronavirus task force press briefings required media outlets to submit questions by email, with the government in most cases ignoring questions posed by critical outlets and journalists.

In March, the government amended the criminal code to make it a crime to spread “fake news” or engage in “fear mongering” during a pandemic punishable by up to five years’ imprisonment. At the time, Harlem Desir, then media freedom representative for the Organization for Security and Co-operation in Europe (OSCE), called on the government to ensure that the Authorization Act should not impede the work of media in Hungary. By July, police had launched 134 criminal investigations concerning “fear mongering.” A majority of cases concern people who expressed critical comments on social media regarding the government’s handling of the pandemic. At time of writing, investigations were ongoing.

In July, Szabolcs Dull, the editor-in-chief of the largest online independent daily, Index, was fired as a result of a financial takeover of the company controlling Index’s revenue streams. The new owner has close links to Prime Minister Viktor Orban and his government. Index’s entire staff resigned in protest. In September, the Media Council, a regulatory body the members of which are appointed by the ruling party, revoked the frequency for Klubradio, an independent radio station in Budapest, entering into effect in February 2021. The Media Council justified its actions referring to Klubradio’s repeated breaches of the media law. Klubradio denied the allegations.

Academic Freedom

In October, the Court of Justice of the European Union (CJEU) ruled that a 2017 law that effectively forced the George Soros funded Central European University to leave Budapest and relocate in Vienna, violated European Union law.

Nonetheless, the government’s efforts to control academic institutions continued. A law adopted in June, which entered into effect in September, effectively abolished the autonomy of the University of Theatre and Film in Budapest, depriving its highest governing body of decision-making power over budgetary, organizational, and staffing issues. The Ministry of Technology and Innovation single-handedly appointed the members of the new board of trustees and the supervisory body—all closely linked to the government and with limited to no knowledge of the arts.

#### Legal discrimination against women, LGBT, and Roma increase risk of harassment and abuse

HRW 21 – Human Rights Watch, International NGO that exposes and studies human rights violations and petitions for governmental action [HRW. “World Report 2021: Hungary.” Human Rights Watch. 2021. https://www.hrw.org/world-report/2021/country-chapters/hungary]

Gender, Sexual Orientation and Gender Identity

The government continued to undermine women’s and LGBT rights. In May, the parliament blocked the ratification of the Council of Europe Convention on Combating Violence Against Women and Domestic Violence, known as the Istanbul Convention, saying it “promotes destructive gender ideologies” and “illegal migration.”

Hungary signed the convention, which mandates government measures to prevent domestic and gender-based violence, protect survivors, and prosecute perpetrators, in 2014. Also, in May, a new law made it impossible for transgender or intersex people to legally change their gender—putting them at risk of harassment, discrimination, and even violence in daily situations when they need to use identity documents. Council of Europe Human Rights Commissioner Dunja Mijatovic, called the law “a blow to the human dignity of trans people” and said it contradicted the case law of the European Court of Human Rights.

Migration and Asylum

The country saw a significant decline in asylum applications in 2020 due to border closures and other restrictions. By July, 95 people had filed for asylum, down from 266 people in the first 7 months of 2019; authorities granted some form of international protection to 113 people. Pushbacks from Hungary to Serbia, sometimes violent, continued.

Following a May ruling from the CJEU that automatic and indefinite placement of asylum seekers in transit zones on the Hungary-Serbia border amounted to unlawful detention, the government dismantled the transit zones and transferred approximately 400 asylum seekers to the only two open reception centers in Hungary. Authorities had already suspended asylum seekers’ access to the zones in March, using the pandemic as a pretext.

In June, the government rammed through a law abolishing the right to seek asylum on Hungarian territory and requiring asylum claims be lodged at specifically designated embassies in non-EU countries. If granted access to the territory, the asylum seeker, including children, will be placed in automatic detention for 30 days with no possibility to appeal their detention. According to the Hungarian Helsinki Committee, as of late July, only seven people—all members of the same family—had applied under the new restrictive system; their application was rejected.

In October, the EU Commission initiated legal action against Hungary on grounds that the new procedures breach EU asylum law.

As of September, the government re-introduced further border closures in response to rising Covid-19 infections, barring entry to most non-Hungarian citizens. Exceptions made for citizens from Czech Republic, Slovakia, and Poland were criticized by the European Commission as discriminatory and contravening the principle of free movement within the EU.

Discrimination

Roma continue to be discriminated in workplaces and schools and many live in abject poverty. In January, following a lower court decision ordering €275,000 (US$327,112) in damages to 60 Roma students who had been unlawfully segregated in primary school, Prime Minister Orban said the ruling was an affront to people’s sense of justice when “members of an ethnically dominant ethnic group can receive a significant amount of money without doing any kind of work.” In May, the Supreme Court upheld the lower court’s decision.

Human Rights Defenders

The government and ruling party members continued their smear campaign against human rights defenders, frequently describing them as “Soros agents” or “national security risks” in government-friendly media.

In June, the CJEU ruled that a 2017 law requiring civil society organization receiving over €20,000 ($23,790) from outside of Hungary to formally register as foreign-funded, was contrary to EU law. At time of writing, the government had taken no action to implement the CJEU ruling and revoke the law.

Civil society organizations and lawyers continued to work on behalf of migrants and refugee rights despite a controversial 2017 law criminalizing aid and assistance to asylum seekers, refugees and migrants. At time of writing, nobody had been charged under the law.

## AT: Biotech Advantages

### 1NC - No bioterror

#### Bioterror impact is false and overblown

**Lentzos 17**[ Filippa Lentzos, Senior research fellow jointly appointed in the Departments of War Studies and of Global Health and Social Medicine at King’s College London, 7-3-2017, "Ignore Bill Gates: Where bioweapons focus really belongs;", Bulletin of the Atomic Scientists, <https://thebulletin.org/2017/07/ignore-bill-gates-where-bioweapons-focus-really-belongs/>, accessed 6-28-2022]

I disagree. At a stretch, terrorists taking advantage of advances in biology might be able to create a viable pathogen. That does not mean they could create a sophisticated biological weapon, and certainly not a weapon that could kill 30 million people. Terrorists in any event tend to be conservative. They use readily available weapons that have a proven track record—not unconventional weapons that are more difficult to develop and deploy. Available evidence shows that few terrorists have ever even contemplated using biological agents, and the extremely small number of bioterrorism incidents in the historical record shows that biological agents are difficult to use as weapons. The skills required to undertake even the most basic of bioterrorism attacks are more demanding than often assumed. These technical barriers are likely to persist in the near- and medium-term future.

Gates does a disservice to the global health security community when he draws media and policy attention to amateurs such as terrorists. Where biological weapons are concerned, the focus should remain on national militaries and state-sponsored groups. These are the entities that might have the capability, now or in the near future, to develop dangerous biological weapons. The real threat is that sophisticated biological weapons will be used by state actors—or by financially, scientifically, and militarily well-resourced groups sponsored by states.

**Biological terror wont happen — assumes CRISPR**

**Revill 17** [Dr. James Revill, Research Fellow with the Harvard Sussex Program at SPRU, “Past as Prologue? The Risk of Adoption of Chemical and Biological Weapons by Non-State Actors in the EU”, European Journal of Risk Regulation, 2017, <https://www.cambridge.org/core/services/aop-cambridge-core/content/view/6B824CDE0E25FD86AC3D0BD07822A743/S1867299X17000356a.pdf/div-class-title-past-as-prologue-the-risk-of-adoption-of-chemical-and-biological-weapons-by-non-state-actors-in-the-eu-div.pdf>, accessed 6-28-2022]

In most cases terrorist groups appear to have largely opted for the simplest pathway towards the achievement of their goals and the weapons used tend to be vernacular, functional devices drawing on local and readily-available materials, rather than sophisticated, “baroque” technologies. This is certainly the case with IEDs, the history of which is characterised largely by incremental innovations – although nevertheless frequently effective ones – with many means of delivery recycled from the past.44 Complexity can therefore be seen as important in the adoption of technology by terrorists generally, but is perhaps particularly acute in the case of CBW technology. Some CBW can be relatively simple: “chlorine-augmented, vehicle-borne IEDs,” as employed by Al-Qaeda in Iraq (AQI) from 2006 to 2007 are not sophisticated weapons.45 Attacks on chemical production facilities, an apparent tactic of Serbian forces in the early to mid-1990s,46 employed relatively simple technologies – specifically explosives – with toxicity a secondary by-product. Direct contamination of food,47 drink48 or healthcare products49 does not require particularly sophisticated technology for the purposes of delivery – although may require some considerable skill to culture and scale-up a biological agent – and has been a common approach in European CBW incidents.50 Similarly, the contamination of water systems, something familiar to Europe,51 can also be relatively easily attempted. However, in most cases such methods of dissemination have generated results that are far short of the “mass destruction” that CBW are associated with, although this does not mean such a possibility can be ignored by those working on public health preparedness. Although some relatively simple approaches could cause significant harm, mass casualty attacks still require considerable expertise, something particularly acute in the context of biological weapons.52 The most effective route to weaponising biology is arguably through the process of aerosolising agents, something recognised mid-way through the last century as opening up the theoretical possibility of using biological weapons on a gigantic scale.53 However, realising such theoretical potential is difficult and it took states decades to develop more predictable biological weapons,54 and even then such weapons were acutely vulnerable to environmental factors. 55 For non-state groups such complexity has proven a significant barrier to CBW development. By means of an example, one of the best-resourced biological weapons programs, that of Aum Shinrikyo, failed variously because the group acquired the wrong strain, contaminated fermenters and were faced with insurmountable production and dissemination difficulties.56 There are of course exceptions, such as the 2001 anthrax Letter Attacks in the US. However, if one accepts the conclusions of the FBI that this sophisticated attack with aerosolised anthrax in the US postal system was perpetrated by a US biodefence researcher, Dr Bruce Ivins,57 it is an exception that proves the rule.

### 1NC - Squo Solves

#### Squo solves risky research

**Kaiser 22** [ Jocelyn Kaiser, staff writer for Science magazine, 3-1-2022, “Spurred by Pandemic, U.S. government will revisit federal policies on risky virus research”, Science, <https://www.science.org/content/article/spurred-pandemic-u-s-government-will-revisit-federal-policies-risky-virus-research>, accessed 6-28-2022]

In the wake of the coronavirus pandemic, the U.S. government is revisiting its oversight of experiments that involve modifying pathogens in ways that might make them more harmful to people. Yesterday, White House officials and the National Institutes of Health (NIH) asked an expert advisory board to undertake a swift, broad review of the agency’s policies that aim to make sure federally funded studies of viruses and other microbes that could cause a pandemic are undertaken safely, and to bar funding for experiments deemed too risky.

The review—to be conducted over 10 months by the National Science Advisory Board for Biosecurity (NSABB)—could include consideration of whether controversial coronavirus experiments funded by the United States in China should have received stricter scrutiny. The panel might also explore whether the United States should fund any such pathogen research conducted abroad, where NIH may have less ability to enforce its rules.

Researchers who say federal oversight of potentially risky research is too lax are welcoming the review. But some NSABB members and outside scientists worry it could result in recommendations that limit U.S. support for research essential to fighting SARS-CoV-2 and future pandemics.

The goal of the biosecurity policy review is to examine some “challenging questions, including … whether there are some experiments that should not be done because of the risks they pose,” said Daniel Gastfriend, director for biodefense and pandemic preparedness at the White House’s National Security Council, during the online NSABB meeting yesterday.

Some researchers have long worried that pathogens being studied in labs could accidentally escape, or even be deliberately released. They have become particularly concerned about certain gain-of-function (GOF) experiments in which researchers give pathogens new capabilities, such as the ability to spread among mammals, in order to better understand their biology.

In response to such concerns, the U.S. government over the past decade has developed several regulatory systems that impose stricter oversight on research involving especially problematic human and animal pathogens. One set of rules, for example, requires NIH to impose special requirements on studies that involve what NIH defines as enhanced potential pandemic pathogens (ePPPs).

### 1NC - Soft Regulation Fails

#### Soft Regs Fail

**Kavanagh 19** [Camino Kavanagh has a PhD in information technology and currently works as a nonresident scholar at the Carnegie Endowment for International Peace, where her research focuses on international security, governance, and emerging technologies, 8-28-2019, “New Tech, New Threats, and New Governance Challenges: An Opportunity to Craft Smarter Responses?”, Carnegie Endowment for International Peace, <https://carnegieendowment.org/2019/08/28/new-tech-new-threats-and-new-governance-challenges-opportunity-to-craft-smarter-responses-pub-79736>, accessed 6-28-2022]

Such projects demonstrate the need to first develop safer versions of this powerful technology and raise important issues related to standards and regulation. The consequences of using such technologies are not contained within national borders, and these effects will likely require some form of transnational mechanism that considers the views of all stakeholders. This calls for a more harmonized approach to biotech policy, especially since rules and practices of gene editing vary significantly from country to country. Meanwhile, all stakeholders, including those funding and supporting research, need to ensure adherence to existing guidance such as the World Health Organization’s (WHO) 2014 set of guidelines for testing genetically modified mosquitoes.132 According to some experts, this push to shore up standards might require the establishment of some form of accountability mechanism that can, at a minimum, oversee adherence to this guidance and identify possible obstacles to implementation.133

Another ecological risk is the potential for biological attacks against food and water resources, which, as discussed further below, would cause economic damage as well as a “loss of confidence in the food supply, and possible loss of life.”134 For example, a recent study determined that scientists’ deepening understanding of the genomes of plants and animals will make it theoretically possible to target vulnerabilities with greater precision or to create new varieties of organisms with potentially harmful properties. The authors posit that “if plant or animal pathogens [a]re engineered to spread widely in the world in crops or herds, respectively, the result could be widespread and lasting food shortages.”135

Other health and safety risks: Incidents like laboratory accidents or research aimed at rendering deadly viruses more contagious or pathogenic pose dangers as well. Relatedly, the publication of such techniques and research outcomes could educate and empower malevolent actors. Concerns of this kind arose from research published by two scientists in 2012 in prominent journals (Nature and Science). Both had succeeded in genetically engineering strains of the avian flu virus (H5N1).136 The controversial decision to publish their research findings stemmed from intense public concerns that the virus could leak out of a laboratory in the event of an accident. More seriously, the research could be leveraged by terrorists to create a biological weapon and unleash a devastating pandemic.

National guidance, regulations, and codes of conduct by the research community are helping address some of these challenges.137 Globally, the International Standards Organization is developing new standards to harmonize attempts to help laboratories manage biological risk, drawing from EU and WHO efforts to establish and implement effective biorisk management systems.138 But there are still important gaps. As biotechnology becomes cheaper and more readily available, these softer forms of regulation will likely be insufficient for managing the associated risks.

#### Soft power fails

**Cecire 14** [Michaeal Cecire, a Black Sea and Eurasia regional analyst and an associate scholar at the Foreign Policy Research Institute, 4-1-2014, “The Limits of Soft Power”, The National Interest, https://nationalinterest.org/commentary/the-limits-soft-power-10163, accessed 6-27-2022]

The Russian invasion of Ukraine has already punctured much of the prevailing foreign-policy thinking that had become pro forma in Washington and Europe. In particular, the notion that Western unilateral disarmament can somehow be balanced or compensated for with less tangible forms of influence—soft power—has much to answer for in this ongoing crisis. By now, it is clear that Moscow’s actions in Crimea strongly demonstrate the sharp limits of soft power, especially one that appears to have been decoupled from hard power, the traditional final arbiter of interstate relations. Ukraine is not merely a geopolitical setback, but a symptom of a misplaced faith in the potency of postmodern soft power as foreign policy plan A through Z.

Ukraine’s rapid transformation from homo Sovieticus–ruled kleptocracy to inspiring popular revolution to the latest victim of Russian imperialism has been astonishing. In the span of mere weeks, Ukraine’s political cleavages have been magnified as the faultline of a tense geopolitical contest between the Euro-Atlantic community and a revanchist, increasingly militant Russia. In the Western scramble to come to terms with the new threat landscape—let alone formulating an effective, unified response—Crimea has almost certainly already been lost. Meanwhile, Russia seems poised to expand its writ into other areas of eastern Ukraine just as it aggressively probes Euro-Atlantic readiness in the Baltic, Turkey, and the Caucasus. In Washington, defense and administration officials appear resigned—if only unofficially—to Russian control over Crimea (if not eastern Ukraine) and are digging in for the long haul.

How did we get here? Among the ideologues, the answer lies in the foreign policies of the current or previous administrations. On the right, President Obama’s “reset” and subordination of foreign policy to domestic issues is the obvious cause. And on the left, President Bush’s wars have given the Kremlin the perfect moral justification. But the reality, like many things, is hardly one sided. Partisans decrying President Obama’s “weakness” appear to ignore that the administration's response to Russia’s occupation of Crimea is already far more muscular than President Bush’s reaction to the Russian invasion of Georgia 2008. And conversely, some of the left’s bizarre use of a war they supposedly opposed to equivocate on the invasion of a sovereign state by corrupt autocracy is as self-contradictory as it is troubling.

The likelier culprit is not so intimately tethered to the tribalisms of American politics, though ideology inevitably has played a role. Instead, the Western political class has become intoxicated with the notion that soft power, now the highly fashionable foreign-policy instrument of first resort, can compensate for—or in some ways replace altogether—diminished hard power. If the late 1990s was the heyday for liberal internationalism by airpower, the late 2000s saw an analogous consensus congregate around soft power.

Soft power is supposed to describe the latent factors—values, economy, culture and the like—of a state, entity or idea to persuade or attract. This contrasts with its more recognizable counterpart, hard power, which is based on the more traditional principle of coercion. There is little doubt that soft power is a real and fundamentally important phenomenon in the conduct of international relations. Contributions from scholars like Joseph Nye and Giulio Gallarotti have made a compelling case that soft power is a powerful geopolitical signifier; but what began as a keen observation had morphed into a cottage industry looking to leverage soft power into a foreign-policy panacea.

In an illuminating 2011 paper published by the Strategic Studies Institute at the U.S. Army War College, University of Reading (U.K.) political scientist Colin S. Gray rightly acknowledges the merits of the soft-power thesis while articulating its practical limitations, particularly in the policy arena.

“While it is sensible to seek influence abroad as cost-effectively as possible, it is only prudent to be modest in one's expectations of the soft power to be secured by cultural influence,” cautions Gray. Indeed, soft power’s attraction and subsequent embrace by the foreign policy elite had as much to do with its usefulness as a substitute for “hard power” as its salience as an idea. But while hard and soft power can be complementary, Gray observes that soft power can in no way compensate for military power. “Sad to say,” laments Gray, “there is no convincing evidence suggesting an absence of demand for the threat and use of military force.” Sad, indeed.

However, events in Ukraine have exposed the stark limits of soft power in a way that no analysis ever could. There is no small irony in the fact that Russia’s forceful military intervention into Ukraine was preceded by a grinding, if superficially velveted, tug of war between Moscow and the West over Ukraine’s integration with two competing soft-power “vehicles”—the EU and the Moscow-led Customs Union-cum-Eurasian Union. It was Yanukovych’s abandonment of Ukraine’s pledge to sign an Association Agreement with the EU—following intense Russian coercion—that protests began again in earnest. Yanukovych’s turn to brutality eventually precipitated his toppling, Russia’s military intervention, and now Crimea’s annexation.

The idea of soft power as operational policy should be buried. While there is some government role in propagating and wielding soft power—public affairs, policy making, and, yes, sometimes psychological operations—the real business of soft power is exists well outside of the domain of the state. In reality, the track record of operationalizing soft power has been, to date, abysmal. Russia is a case in point. Moscow repeatedly sought to revise the post-Cold War order through a variety of projects that might normally be filed as soft-power initiatives: then president Dmitry Medvedev’s repeated attempts to reorient the European security architecture; the Kremlin obsession with making the ruble an international reserve currency; the formation of the Russia-led Customs Union in 2010; and the (now likely stillborn) plans to establish the Eurasian Union. And yet, in the end, Crimea was forcibly seized by men with guns.

Indeed, the truer currency of power remains the ability to coerce. Fatigue from disastrous wars in Iraq and Afghanistan elevated expectations that soft power could supplant a beleaguered and overstretched U.S. military. Why, indeed, would the U.S. opt for coercion when civilizational persuasion could do the trick? Pro-West people power in Eurasia seemed to bolster the case for operationalized soft power after the “color revolutions” in Georgia, Ukraine and Kyrgyzstan. Yet the longer-term results were unpredictable at best and disastrous at worst. Over time, it has become increasingly apparent that soft power is perhaps less an instrument to wield than a favorable wind at our backs.

The crisis with Russia has laid bare the limits of soft power as well as the continued relevance of hard power—even in “postmodern” Europe. While the Obama administration should be credited with being among the few Western governments to offer a relatively serious response to the Ukraine crisis, the White House overall still seems uncomfortable with the difficult but very real role that hard power necessarily plays in establishing and policing a U.S.-led, liberal normative order. This must change with the new circumstances established by Russian revanchism. Western values can only be propagated and upheld with the ultimate guarantee of hard power. And if the West is not prepared to enforce its values with tangible consequences, then perhaps we should abandon the pretense of a rules-based international system and cease the cruel practice of giving hope where there is none to be had.

Soft power is here to stay, but its moment as a diplomatic instrument has long since gone. Because, in reality, it was never really much more than an illusion of what we wished the world to be rather than the one that exists.

### 1NC – AT: Climate

#### Biotech doesn’t solve climate/ cap link?

**Fuge 21** [Lauren Fuge, a science journalist at Cosmos and holds a BSc in physics from the University of Adelaide, 8-5-2021, “ Tech alone cannot solve climate crisis”, Cosmos, https://cosmosmagazine.com/technology/tech-alone-cannot-solve-climate-crisis/, 6-27-2022]

An international team of scientists says that we cannot rely on technology to meet climate targets – instead, wealthy countries must change their lifestyles to dramatically reduce emissions and avoid climate breakdown.

The new article, published in Nature Energy, calls for the urgent development of new climate models that explore ways economies can remain stable without constantly growing, reducing the reliance on potentially unfeasible new technologies to fix our problems.

“We cannot keep temperature rises below 1.5 degrees using technology alone – unfortunately this will require lifestyle changes in wealthy countries,” says Manfred Lenzen from the University of Sydney, co-author of the study.

“Because we’ve not implemented significant emissions reductions over the past decades when we should have, we now need to reduce emissions rapidly and like we’ve never done before.”

Models attempt to predict future temperatures and climate based on current data and simulations; they can follow a variety of pathways to different outcomes based on our choices now.

Many of these current models accept that economies will continue to strive for growth, and factor in dramatic technological change in order to meet climate targets such as the Paris Agreement.

The United Nations Framework Convention on Climate Change, for example, argues that innovative technology is essential for not only cutting greenhouse gas emissions but also adapting to the impacts of climate change.

But this new study argues that technological fixes – such as carbon capture and storage, nuclear fusion, or injecting particulates into the atmosphere – may be unfeasible to scale up to the required levels, especially as increased economic growth drives up energy demand.

The authors point out that to remove carbon from the atmosphere at a fast enough rate, direct air carbon capture and storage (DACCS) methods may use up to half of the world’s current electricity generation. This would then make it difficult to make the global transition to renewables.

“Scientists have raised substantial questions about the risks of negative emissions technologies and the feasibility of sufficiently decoupling economic growth from rising emissions,” says Jason Hickel, lead author of the paper from the London School of Economics and Political Science (LSE).

“Put bluntly, these approaches may not be adequate to address the crisis we face. We’re gambling the future of humanity and the rest of life on Earth because of the assumption that GDP must continue to grow in rich countries.”

This echoes previous research arguing that over-reliance on new technology is enabling us to delay a dramatic reduction in emissions, creating a dangerous cycle of technological promises and re-framed climate change targets.

Instead, scientists call for widespread cultural, social and political transformation.

“It doesn’t have to be this way,” Hickel and colleagues write. “High-income nations can maintain economic stability, invest in innovation and achieve strong social outcomes without the need for additional growth, thereby making mitigation easier to achieve.”

They instead propose policies that will reduce inequality, guarantee living wages, shorten the working week, and ensure access to healthcare, education and other essential services.

“If we share the yields of our economy more fairly, we can ensure good lives for all without plundering the planet for more,” Hickel says.

By updating existing climate models to address alternative ‘post-growth’ scenarios, the authors conclude, this would “help broaden the range of policy options for public debate”.

#### Biotech won’t solve climate

Lancaster University 20 [4-20-2020, “Why relying on new technology won't save the planet”, Science Daily, https://www.sciencedaily.com/releases/2020/04/200420125510.htm, 6-27-2022]

Researchers Duncan McLaren and Nils Markusson from Lancaster Environment Centre say that: "For forty years, climate action has been delayed by technological promises. Contemporary promises are equally dangerous. Our work exposes how such promises have raised expectations of more effective policy options becoming available in the future, and thereby enabled a continued politics of prevarication and inadequate action.

"Prevarication is not necessarily intentional, but such promises can feed systemic 'moral corruption', in which current elites are enabled to pursue self-serving pathways, while passing off risk onto vulnerable people in the future and in the global South.

The article describes a history of such promises, showing how the overarching international goal of 'avoiding dangerous climate change' has been reinterpreted and differently represented in the light of new modelling methods, scenarios and technological promises.

The researchers argue that the targets, models and technologies have co-evolved in ways that enable delay: "Each novel promise not only competes with existing ideas, but also downplays any sense of urgency, enabling the repeated deferral of political deadlines for climate action and undermining societal commitment to meaningful responses.

They conclude: "Putting our hopes in yet more new technologies is unwise. Instead, cultural, social and political transformation is essential to enable widespread deployment of both behavioural and technological responses to climate change."

### --xt past tipping points

#### We’ve already passed the climate tipping point

Carrington 22 (Damian Carrington, “Extreme heat in oceans ‘passed point of no return’ in 2014, The Guardian, February 1 2022, <https://www.theguardian.com/environment/2022/feb/01/extreme-heat-oceans-passed-point-of-no-return-high-temperatures-wildlife-seas>, WC-NAS)

Extreme heat in the world’s oceans passed the “point of no return” in 2014 and has become the new normal, according to research.

Scientists analysed sea surface temperatures over the last 150 years, which have risen because of global heating. They found that extreme temperatures occurring just 2% of the time a century ago have occurred at least 50% of the time across the global ocean since 2014.

In some hotspots, extreme temperatures occur 90% of the time, severely affecting wildlife. More than 90% of the heat trapped by greenhouse gases is absorbed by the ocean, which plays a critical role in maintaining a stable climate.

“By using this measure of extremes, we’ve shown that climate change is not something that is uncertain and may happen in the distant future – it’s something that is a historical fact and has occurred already,” said Kyle Van Houtan, at the Monterey Bay Aquarium, US, and one of the research team. “Extreme climate change is here, it’s in the ocean, and the ocean underpins all life on Earth.”

Van Houtan and his colleague Kisei Tanaka are ecologists and began the study because they wanted to assess how heat extremes were related to the loss of kelp forests off the coast of California.

“Ecology teaches us that extremes have an outsized impact on ecosystems,” Van Houtan said. “We are trying to understand the dramatic changes that we’ve seen along our coasts and in the ocean, on coral reefs, kelp, white sharks, sea otters, fish, and more.”

Other scientists reported in 2019 that the [number of heatwaves affecting the planet’s oceans had increased sharply](https://www.theguardian.com/environment/2019/mar/04/heatwaves-sweeping-oceans-like-wildfires-scientists-reveal), killing swathes of sea life like “wildfires that take out huge areas of forest”.

Van Houtan and Tanaka found no measure of extreme heat existed and so extended their work globally. The study, [published in the Plos Climate](https://journals.plos.org/climate/article?id=10.1371/journal.pclm.0000007) journal, examined the monthly temperature in each one-degree-by-one-degree part of the ocean and set the highest temperature in the 50-year period as the benchmark for extreme heat.

The scientists then examined temperature records from 1920 to 2019, the most recent year available. They found that by 2014, more than 50% of the monthly records across the entire ocean had surpassed the once-in-50–years extreme heat benchmark. The researchers called the year when the percentage passed 50% and did not fall back below it in subsequent years the “point of no return”.

By 2019, the proportion of the global ocean suffering extreme heat was 57%. “We expect this to keep on going up,” said Van Houtan. But the extreme heat was particularly severe in some parts of the ocean, with the South Atlantic having passed the point of no return in 1998. “That was 24 years ago – that is astounding,” he said.

The proportion of the ocean experiencing extreme heat in some large ecosystems is now 80%-90%, with the five worst affected including areas off the north-east coasts of the US and Canada, off Somalia and Indonesia, and in the Norwegian Sea.

“You should care about turtles, seabirds and whales, but even if you don’t, the two most lucrative fisheries in the US, lobster and scallops, are in those exact spots,” said Van Houtan, while 14 fisheries in Alaska have recently been [declared federal disasters](https://www.ktoo.org/2022/01/25/federal-disasters-declared-for-14-alaska-fisheries/#:~:text=The%20disaster%20declarations%20include%20the,in%20the%20summer%20of%202021.).

<IMAGE OMITTED>

The heat content of the top 2,000 metres of the [ocean set a new record in 2021](https://www.theguardian.com/environment/2022/jan/11/oceans-hottest-temperatures-research-climate-crisis), the sixth in a row. Prof John Abraham at the University of St Thomas in Minnesota, one of the team behind the assessment, said ocean heat content was the most relevant to global climate, while surface temperatures were most relevant to weather patterns, as well as many ecosystems.

“Oceans are critical to understanding climate change. They cover about 70% of the planet’s surface and absorb more than 90% of global warming heat,” Abraham said. “The new study is helpful because the researchers look at the surface temperatures. It finds there has been a big increase in extreme heat at the ocean’s surface and that the extremes are increasing over time.”

### --xt Carbon neutrality fails

#### Carbon neutrality isn’t enough

Kirkpatrick 19 [David Kirkpatrick, journalist and founder of Techonomy, 11-14-2019, “Carbon Neutral Isn't Enough”, Techonomy, https://techonomy.com/carbon-neutral-isnt-enough/, 6-28-2022]

Many people believe that if we all just drove electric cars, used LED lightbulbs, and even did things like sail across the ocean rather than fly, the resulting reduction in pollution could somehow stop global warming. Unfortunately, it isn’t true. Yes, the world has to radically reduce emissions of carbon dioxide (CO2) and other global warming gasses. But to avoid planetary catastrophe, we also must remove a vast amount of CO2 that’s already in our atmosphere.

The United Nations’ Intergovernmental Panel on Climate Change (IPCC) says average global temperatures cannot be allowed to exceed, at the very most, 2 degrees centigrade above the average that prevailed before industrialization. If possible, the increase shouldn’t exceed 1.5 degrees. Otherwise, we face even more violent weather, damaging wildfires, rising sea levels, water scarcity, an unstable food supply, and who knows what other horrors. And here is a key but little-discussed passage from an important 2018 IPCC report: “All pathways that limit global warming to 1.5°C with limited or no overshoot project the use of carbon dioxide removal (CDR).” Note the word–“all.”

“We’ve got to keep temperature rise to 1.5 degrees, and that can’t be done without carbon removal,” summarizes James Mulligan, who works fulltime on this issue at the World Resources Institute (WRI), a large global non-profit focused on natural resource sustainability. Adds Leslie Jones, a vice president and climate expert at the Environmental Defense Fund (EDF): “The National Academy of Sciences has concluded that if we’re going to have a fighting chance to limit warming to 1.5 or even 2 degrees, we’ll have to do two things–aggressively slash greenhouse gas emissions and deploy carbon removal, both natural approaches and emerging technologies.”

Containing emissions will be all the more challenging given the world’s other needs. The United Nations’ 17 Sustainable Development Goals for 2030 articulate many things we must achieve for a fairer, healthier world. Goal number 13 is “Climate Action.” But other goals demand economic inclusion and societal health. Those can’t be achieved without ongoing economic growth, particularly in developing countries that were excluded from the industrial world’s 20th century accumulation of wealth. The legitimate demands of previously excluded people will thus place more pressure on global atmospheric CO2.

Warming gasses are still getting worse in the atmosphere, but it won’t be enough to make them stop, go down, or even disappear. We literally have to suck them up. Neutral is not enough. To meet the 1.5 degree target, says the EDF’s Jones, “We need to reach net zero greenhouse gas emissions by 2050, and keep that trend line going down to net negative.” Already 60 nations have committed themselves to “net zero” emissions, including Britain, France, and Germany. Eliminating all CO2 emissions will almost certainly be impossible. (There’s little near-term likelihood of electric airliners, for example.) So we’ll need rapid progress in CDR just to get to “net zero,” and far more to go “net negative.” Here’s the bottom line: carbon removal at large scale is indispensable for maintaining a livable earth.

## AT: Solvency

### 1NC – No Enforcement

#### A lack of political will, hidden manufacturers, and industry pressure make standards unenforceable

Samore 21 -- Professor of the Politics and Middle East Studies at Brandeis University. Senior official in the National Secuirty Council for nonprolif of wmds under Clinton and Obama, MA and PhD from the Government Department of Harvard University [Gary. “Nobody is Checking for Violations of the Biological Weapons Convention.” Global Biodefense. 9/23/2021. https://globalbiodefense.com/2021/09/23/nobody-is-checking-for-violations-of-the-biological-weapons-convention/]

CDC microbiologist suited up inside a BSL-4 high containment laboratory. Credit: CDC / Dr. Scott Smith

A global treaty bans development or stockpiling of biological weapons — but allows biodefense planning.

Scientists are making dramatic progress with techniques for “gene splicing” – modifying the genetic makeup of organisms.

This work includes bioengineering pathogens for medical research, techniques that also can be used to create deadly biological weapons. It’s an overlap that’s helped fuel speculation that the SARS-CoV-2 coronavirus was bioengineered at China’s Wuhan Institute of Virology and that it subsequently “escaped” through a lab accident to produce the COVID-19 pandemic.

The world already has a legal foundation to prevent gene splicing for warfare: the 1972 Biological Weapons Convention. Unfortunately, nations have been unable to agree on how to strengthen the treaty. Some countries have also pursued bioweapons research and stockpiling in violation of it.

As a member of President Bill Clinton’s National Security Council from 1996 to 2001, I had a firsthand view of the failure to strengthen the convention. From 2009 to 2013, as President Barack Obama’s White House coordinator for weapons of mass destruction, I led a team that grappled with the challenges of regulating potentially dangerous biological research in the absence of strong international rules and regulations.

The history of the Biological Weapons Convention reveals the limits of international attempts to control research and development of biological agents.

1960s-1970s: International negotiations to outlaw biowarfare

The United Kingdom first proposed a global biological weapons ban in 1968.

Reasoning that bioweapons had no useful military or strategic purpose given the awesome power of nuclear weapons, the U.K. had ended its offensive bioweapons program in 1956. But the risk remained that other countries might consider developing bioweapons as a poor man’s atomic bomb.

In the original British proposal, countries would have to identify facilities and activities with potential bioweapons applications. They would also need to accept on-site inspections by an international agency to verify these facilities were being used for peaceful purposes.

These negotiations gained steam in 1969 when the Nixon administration ended America’s offensive biological weapons program and supported the British proposal. In 1971, the Soviet Union announced its support – but only with the verification provisions stripped out. Since it was essential to get the USSR on board, the U.S. and U.K. agreed to drop those requirements.

In 1972 the treaty was finalized. After gaining the required signatures, it took effect in 1975.

Under the convention, 183 nations have agreed not to “develop, produce, stockpile or otherwise acquire or retain” biological materials that could be used as weapons. They also agreed not to stockpile or develop any “means of delivery” for using them. The treaty allows “prophylactic, protective or other peaceful” research and development – including medical research.

However, the treaty lacks any mechanism to verify that countries are complying with these obligations.

1990s: Revelations of treaty violations

This absence of verification was exposed as the convention’s fundamental flaw two decades later, when it turned out that the Soviets had a great deal to hide.

In 1992, Russian President Boris Yeltsin revealed the Soviet Union’s massive biological weapons program. Some of the program’s reported experiments involved making viruses and bacteria more lethal and resistant to treatment. The Soviets also weaponized and mass-produced a number of dangerous naturally occurring viruses, including the anthrax and smallpox viruses, as well as the plague-causing Yersinia pestis bacterium.

Yeltsin in 1992 ordered the program’s end and the destruction of all its materials. But doubts remain whether this was fully carried out.

Another treaty violation came to light after the U.S. defeat of Iraq in the 1991 Gulf War. United Nations inspectors discovered an Iraqi bioweapons stockpile, including 1,560 gallons (6,000 liters) of anthrax spores and 3,120 gallons (12,000 liters) of botulinum toxin. Both had been loaded into aerial bombs, rockets and missile warheads, although Iraq never used these weapons.

In the mid-1990s, during South Africa’s transition to majority rule, evidence emerged of the former apartheid regime’s chemical and biological weapons program. As revealed by the South African Truth and Reconciliation Commission, the program focused on assassination. Techniques included infecting cigarettes and chocolates with anthrax spores, sugar with salmonella and chocolates with botulinum toxin.

In response to these revelations, as well as suspicions that North Korea, Iran, Libya and Syria were also violating the treaty, the U.S. began urging other nations to close the verification gap. But despite 24 meetings over seven years, a specially formed group of international negotiators failed to reach agreement on how to do it. The problems were both practical and political.

Monitoring biological agents

Several factors make verification of the bioweapons treaty difficult.

First, the types of facilities that research and produce biological agents, such as vaccines, antibiotics, vitamins, biological pesticides and certain foods, can also produce biological weapons. Some pathogens with legitimate medical and industrial uses can also be used for bioweapons.

Further, large quantities of certain biological weapons can be produced quickly, by few personnel and in relatively small facilities. Hence, biological weapons programs are more difficult for international inspectors to detect than nuclear or chemical programs, which typically require large facilities, numerous personnel and years of operation.

So an effective bioweapons verification process would require nations to identify a large number of civilian facilities. Inspectors would need to monitor them regularly. The monitoring would need to be intrusive, allowing inspectors to demand “challenge inspections,” meaning access on short notice to both known and suspected facilities.

Finally, developing bioweapons defenses – as permitted under the treaty – typically requires working with dangerous pathogens and toxins, and even delivery systems. So distinguishing legitimate biodefense programs from illegal bioweapons activities often comes down to intent – and intent is hard to verify.

Because of these inherent difficulties, verification faced stiff opposition.

Political opposition to bioweapons verification

As the White House official responsible for coordinating the U.S. negotiating position, I often heard concerns and objections from important government agencies.

The Pentagon expressed fears that inspections of biodefense installations would compromise national security or lead to false accusations of treaty violations. The Commerce Department opposed intrusive international inspections on behalf of the pharmaceutical and biotechnology industries. Such inspections might compromise trade secrets, officials contended, or interfere with medical research or industrial production.

Germany and Japan, which also have large pharmaceutical and biotechnology industries, raised similar objections. China, Pakistan, Russia and others opposed nearly all on-site inspections. Since the rules under which the negotiation group operated required consensus, any single country could block agreement.

In January 1998, seeking to break the deadlock, the Clinton administration proposed reduced verification requirements. Nations could limit their declarations to facilities “especially suitable” for bioweapons uses, such as vaccine production facilities. Random or routine inspections of these facilities would instead be “voluntary” visits or limited challenge inspections – but only if approved by the executive council of a to-be-created international agency monitoring the bioweapons treaty.

But even this failed to achieve consensus among the international negotiators.

Finally, in July 2001, the George W. Bush administration rejected the Clinton proposal – ironically, on the grounds that it was not strong enough to detect cheating. With that, the negotiations collapsed.

Since then, nations have made no serious effort to establish a verification system for the Biological Weapons Convention.

Even with the amazing advances scientists have made in genetic engineering since the 1970s, there are few signs that countries are interested in taking up the problem again.

This is especially true in today’s climate of accusations against China, and China’s refusal to fully cooperate to determine the origins of the COVID-19 pandemic.