## FWK

#### I affirm the resolution Resolved: Member nations of the WTO ought to reduce intellectual property protections for medicines.

#### I value morality

#### The standard is utilitarinsm- or maximizing expected well being.

#### Pain is intrinsically bad and pleasure in instrincaly bad- shown by how if you hot a stove you immeditably move your finger away. This affects what actions we take for example we don’t try to get hit by cars since that would cause pain or kids eat candy because it gives them pleasure. This means that morality should be centered around pain and pleasure since its what guides human actions.

## Contention 1

#### Only the plan can solve covid access – inequalities heighten the risk of mutations and uneven development – neg objections miss the boat.

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According to Duke Global Health Innovation Center, which monitors COVID-19 vaccine purchases, rich nations representing just 14 per cent of the world population have bought up to 53 per cent of the most promising vaccines so far. As of 4 July 2021, the high-income countries (HICs) purchased more than half (6.16 billion) vaccine doses sold globally. At the same time, the low-income countries (LICs) received only 0.3 per cent of the vaccines produced. The low and middle-income countries (LMICs), which account for 81 per cent of the global adult population, purchased 33 per cent, and COVAX (COVID-19 Vaccines Global Access) has received 13 per cent.10 Many HICs bought enough doses to vaccinate their populations several times over. For instance, Canada procured 10.45 doses per person, while the UK, EU and the US procured 8.18, 6.89, and 4.60 doses per inhabitant, respectively.11

Consequently, there is a significant disparity between HICs and LICs in vaccine administration as well. As of 8 July 2021, 3.32 billion vaccine doses had been administered globally.12 Nonetheless, only one per cent of people in LICs have been given at least one dose. While in HICs almost one in four people have received the vaccine, in LICs, it is one in more than 500. The World Health Organization (WHO) notes that about 90 per cent of African countries will miss the September target to vaccinate at least 10 per cent of their populations as a third wave looms on the continent.13 South Africa, the most affected African country, for instance, has vaccinated less than two per cent of its population of about 59 million. This is in contrast with the US where almost 47.5 per cent of the population of more than 330 million has been fully vaccinated. In Sub-Saharan Africa, vaccine rollout remains the slowest in the world. According to the International Monetary Fund (IMF), at current rates, by the end of 2021, a massive global inequity will continue to exist, with Africa still experiencing meagre vaccination rates while other parts of the world move much closer to complete vaccination.14

This vaccine inequity is not only morally indefensible but also clinically counter-productive. If this situation prevails, LICs could be waiting until 2025 for vaccinating half of their people. Allowing most of the world’s population to go unvaccinated will also spawn new virus mutations, more contagious viruses leading to a steep rise in COVID-19 cases. Such a scenario could cause twice as many deaths as against distributing them globally, on a priority basis. Preventing this humanitarian catastrophe requires removing all barriers to the production and distribution of vaccines. TRIPS is one such barrier that prevents vaccine production in LMICs and hence its equitable distribution.

TRIPS: Barrier to Equitable Health Care Access

The opponents of the waiver proposal argue that IPR are not a significant barrier to equitable access to health care, and existing TRIPS flexibilities are sufficient to address the COVID-19 pandemic. However, history suggests the contrary. For instance, when South Africa passed the Medicines and Related Substances Act of 1997 to address the HIV/AIDS public health crisis, nearly 40 of world’s largest and influential pharma companies took the South African government to court over the violation of TRIPS. The Act, which invoked the compulsory licensing provision, allowed South Africa to produce affordable generic drugs.15 The Big Pharma also lobbied developed countries, particularly the US, to put bilateral trade sanctions against South Africa.16

Similarly, when Indian company Cipla decided to provide generic antiretrovirals (ARVs) to the African market at a lower cost, Big Pharma retaliated through patent litigations in Indian and international trade courts and branded Indian drug companies as thieves.17 Another instance was when Swiss company Roche initiated patent infringement proceedings against Cipla’s decision to launch a generic version of cancer drug, “erlotinib”. Though the Delhi High Court initially dismissed Roche's appeal by citing “public interest” and “affordability of medicines,” the continued to pressure the generic pharma companies over IPR. 18 Likewise, Pfizer’s aggressive patenting strategy prevented South Korea in developing pneumonia vaccines for children.19

A recent document by Médecins Sans Frontières (MSF), or Doctors Without Borders, highlights various instances of how IP hinders manufacturing and supply of diagnostics, medical equipment, treatments and vaccines during the COVID-19 pandemic. For instance, during the peak of the COVID-19 first wave in Europe, Roche rejected a request from the Netherlands to release the recipe of key chemical reagents needed to increase the production of diagnostic kits. Another example was patent holders threatening producers of 3D printing ventilators with patent infringement lawsuits in Italy.20 The MSF also found that patents pose a severe threat to access to affordable versions of newer vaccines.21

The opponents of the TRIPS waiver also argue that IP is the incentive for innovation and if it is undermined, future innovation will suffer. However, most of the COVID-19 medical innovations, particularly vaccines, are developed with public financing assistance. Governments spent billions of dollars for COVID-19 vaccine research. Notably, out of $6.1 billion in investment tracked up to July 2021, 98.12 per cent was public funding.22 The US and Germany are the largest investors in vaccine R&D with $2.2 billion and $1.5 billion funding.

Private companies received 94.6 per cent of this funding; Moderna received the highest $956.3 million and Janssen $910.6 million. Moreover, governments also invested $50.9 billion for advance purchase agreements (APAs) as an incentive for vaccine development. A recent IMF working paper also notes that public research institutions were a key driver of the COVID-19 R&D effort—accounting for 70 per cent of all COVID-19 clinical trials globally.23 The argument is that vaccines are developed with the support of substantial public financing, hence there is a public right to the scientific achievements. Moreover, private companies reaped billions in profits from COVID-19 vaccines.

One could argue that since the US, Germany and other HICs are spending money, their citizens are entitled to get vaccines first, hence vaccine nationalism is morally defensible. Nonetheless, it is not the case. The TRIPS Agreement includes several provisions which mandates promotion of technology transfer from developed countries to LDCs. For instance, Article 7 states that "the protection and enforcement of IP rights should contribute to the promotion of technological innovation and the transfer and dissemination of technology, to the mutual advantage of producers and users of technical knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations."24 Similarly, Article 66.2 also mandates the developed countries to transfer technologies to LDCs to enable them to create a sound and viable technological base. The LMICs opened their markets and amended domestic patent laws favouring developing countries’ products against this promise of technology transfer.

Another argument against the proposed TRIPS waiver is that a waiver would not increase the manufacturing of COVID-19 vaccines. Indeed, one of the significant factors contributing to vaccine inequity is the lack of manufacturing capacity in the global south. Further, a TRIPS waiver will not automatically translate into improved manufacturing capacity. However, a waiver would be the first but essential step to increase manufacturing capacity worldwide. For instance, to export COVID-19 vaccine-related products, countries need to ensure that there are no IP restrictions at both ends – exporting and importing. The market for vaccine materials includes consumables, single-use reactors bags, filters, culture media, and vaccine ingredients. Export blockages on raw materials, equipment and finished products harm the overall output of the vaccine supply chain. If there is no TRIPS restriction, more governments and companies will invest in repurposing their facilities.

Similarly, the arguments such as that no other manufacturers can carry out the complex manufacturing process of COVID-19 vaccines and generic manufacturing as that would jeopardise quality, have also been proven wrong in the past. For instance, in the early 1990s, when Indian company Shantha Biotechnics approached a Western firm for a technology transfer of Hepatitis B vaccine, the firm responded that “India cannot afford such high technology vaccines… And even if you can afford to buy the technology, your scientists cannot understand recombinant technology in the least.”25 Later, Shantha Biotechnics developed its own vaccine at $1 per dose, and the UNICEF (United Nations Children’s Emergency Fund) mass inoculation programme uses this vaccine against Hepatitis B. In 2009, Shantha sold over 120 million doses of vaccines globally.

India also produces high-quality generic drugs for HIV/AIDS and cancer treatment and markets them across the globe. Now, a couple of Indian companies are in the last stage of producing mRNA (Messenger RNA) vaccines.26 Similarly, Bangladesh and Indonesia claimed that they could manufacture millions of COVID-19 vaccine doses a year if pharmaceutical companies share the know-how.27 Recently, Vietnam also said that the country could satisfy COVID-19 vaccine production requirements once it obtains vaccine patents.28 Countries like the United Arab Emirates (UAE), Turkey, Cuba, Brazil, Argentina and South Korea have the capacity to produce high-quality vaccines but lack technologies and know-how. However, Africa, Egypt, Morocco, Senegal, South Africa and Tunisia have limited manufacturing capacities, which could also produce COVID-19 vaccines after repurposing.

Moreover, COVID-19 vaccine IPR runs across the entire value chain – vaccine development, production, use, etc. A mere patent waiver may not be enough to address the issues related to its production and distribution. What is more important here is to share the technical know-how and information such as trade secrets. Therefore, the existing TRIPS flexibilities, such as compulsory and voluntary licensing, are insufficient to address this crisis. Further, compulsory licensing and the domestic legal procedures it requires is cumbersome and not expedient in a public health crisis like the COVID-19 pandemic.

India’s Role in Ensuring Vaccine Equity India's response to COVID-19 at the global level was primarily two-fold. First, its proactive engagements in the regional and international platforms. Second, its policies and programmes to provide therapeutics and vaccines to the world. Since the beginning of the COVID-19 pandemic, India has been advocating international cooperation and policy coordination in fighting it. For instance, in April 2020, India co-sponsored a UN resolution that called for fair and equitable access to essential medical supplies and future vaccines to COVID-19. Later, in October 2020, India also put pressure on developed countries with a joint WTO proposal for TRIPS waiver. India’s Vaccine Maitri initiative also aims vaccine equity. As of 29 May 2021, India has supplied 663.698 lakh doses of COVID-19 vaccines to 95 countries. It includes 107.15 lakh doses as a gift to more than 45 countries, 357.92 lakh doses by commercial sales, and 198.628 lakh doses to the COVAX facility.29 The COVAX initiative aims to ensure rapid and equitable access to COVID-19 vaccines for all countries, regardless of their income level. India has decided to supply 10 million doses of the vaccine to Africa and one million to the UN health workers under the COVAX facility. India has also removed the IPR of Covaxin that would help platforms like C-TAP once WHO and developed countries’ regulatory bodies approve the vaccine. If agreed, the waiver would benefit India in many ways. First, more vaccines will help the country to control the pandemic and its recurring waves. Second, it will be a boost to India's pharma industry, particularly the generic medicine industry. According to the Biotechnology Innovation Organization, 834 unique active compounds are involved in the current R&D of COVID-19 therapeutics, vaccines, and diagnostics. It means that thousands of new patents are awaited, and that will hinder India's ability to produce COVID-19 related medical products. Only through a waiver, this challenge can be addressed. Similarly, scientists note that mRNA is the future of vaccine technology. However, manufacturing mRNA vaccines involves complex processes and procedures. Only a very few Indian manufacturers have access to this technology; however, that too is limited. Once Indian companies have access to mRNA technology, it will help country’s generic medicine industry and boost India’s economy. Therefore, even if the WTO agrees on a waiver for a period shorter than proposed, India should accept it. In addition, mRNA vaccines can be produced in lesser time compared to the traditional vaccines. While traditional vaccines’ production takes four to five months, mRNA needs only six to eight weeks. Access to this technology will be vital for India in expediting the fight against COVID-19 and future pandemics. Finally, a waiver may strengthen India's diplomatic soft power. At present, what hinders India's Vaccine Maitri initiative is the scarcity of vaccines at home. On the other hand, China is increasing its standing in Africa, South America and the Pacific through vaccine diplomacy. The WHO approval of the Chinese vaccines and lack of access to vaccines by most developing countries, opens up huge space for China to do its vaccine diplomacy. Here, India should convince its Quad partners, particularly Australia and Japan, who oppose the waiver that vaccine production in developing countries through TRIPS waiver will enable the grouping to deliver its pledged billion doses of COVID-19 vaccine in the Indo-Pacific region. In short, the proposed waiver, if agreed, will help India in addressing the public health crisis by producing more vaccines and distributing them at home; economically, by boosting its generic pharmaceutical industry, and diplomatically, providing vaccines to the developing and least-developed countries. Therefore, India should use all available means and methods, from trade-offs to pressurising, to make the waiver happen.

#### Yes scale-up for covid.

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Currently many idle suppliers can’t begin vaccine production until they upgrade and repurpose existing manufacturing capacity for new technology. Opponents often argue that this step is the true barrier to rapid scale-up. One high-profile detractor, BIO President and CEO Michelle McMurry-Heath, argues that “handing [needy countries] the blueprint to construct a kitchen that — in optimal conditions — can take a year to build will not help us stop the emergence of dangerous new Covid variants.”

This argument ignores two core truths: In many cases, manufacturing capacity needs only repurposing which can take mere months. And Covid-19, at the current global response and vaccination rates, will be a threat for years.

Both truths suggest that we pass the blueprint and build the kitchen.

Facilitating structures to transfer technology and capacity are already in place. The WHO launched the mRNA technology transfer hub model last month to provide manufacturers in low- and middle-income countries with the financial, training, and logistical support needed to scale up vaccine manufacturing capacity. Scores of manufacturers in these countries have already expressed interest. This initiative, however, requires recipient manufacturers to acquire the IP necessary for mRNA technologies— which is currently missing.

#### Independently strategic patenting harms innovation incentives during pandemics – encourages reproduction of generics and decrease breakthroughs.

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As the COVID-19 pandemic is sweeping through the world, thousands of people urgently need access to affordable medicines. Based on past experience of treatments for other life-threatening diseases, there is a fear that access to any vaccines and treatment that may be developed in the future will be affected by patents, leading to unaffordably high prices. However, the problem of high drug prices is not new. It had been inflating healthcare budgets and posing a serious risk to the affordability and accessibility of medicines for society well before the pandemic.Footnote3 This problem is further exacerbated by the fact that, despite the alleged surge in investments into pharmaceutical R&D, current statistics indicate that the number of new breakthrough medicines is decreasing.Footnote4 On the other hand, the number of drugs that contain modifications of existing medicines is growing, demonstrating that pharmaceutical companies have been increasingly focusing their research on incremental drug development, rather than on breakthrough innovation.Footnote5 Various reasons for high drug prices and the growing focus on incremental innovation are put forward by pharmaceutical companies, including the complexity of drug discovery and development, as well as the expensive and lengthy regulatory procedures involved.Footnote6 While these reasons play an important role in this regard, some practices by pharmaceutical companies substantially contribute to this problem.Footnote7 In particular, pharmaceutical companies have been increasingly engaging in strategic patenting to delay or even block generic competition.Footnote8 These practices attracted the attention of the European Commission, which discussed them more than a decade ago in its 2009 Pharmaceutical Sector Inquiry Report.Footnote9 The Commission identified a series of patent strategies which it described as aiming “to extend the breadth and duration of [originators’] patent protection”Footnote10 and “to delay or block the market entry of generic medicine”.Footnote11 Such findings have fuelled debates as to whether these strategies may be deemed unlawful and violate EU competition rules, while also being justifiable business practices under patent law. Until today, no agreement has been reached either on the legality of these practices, or on an efficient legal tool to assess them. As a result, despite there being solid evidence that such strategies may block generic competition, allowing originators to maintain artificially high drug prices and preventing patients from accessing cheaper generics, they remain outside the ambit of the Commission’s activities. Instead, the Commission has been focusing on more straightforward patent-related practices, such as reverse payment agreements. This article argues that strategic patenting by pharmaceutical companies requires a long-overdue intervention by competition authorities. It aims to attract their attention to the harmful effects of strategic patenting. Specifically, it will contest the argument traditionally put forward by originator pharmaceutical companies that the intervention of competition law into patenting practices will reduce their incentives to innovate. The paper will argue to the contrary that, along with a more immediate negative effect in the form of high drug prices that is widely explored in the literature,Footnote12 strategic patenting also affects dynamic competition by stifling innovation. Importantly, it will be explained that the assessment of the effect of this practice should focus not only on innovation by originators, but should also take a wider market perspective by assessing its effect on follow-on innovation by generic companies. The latter argument is often overlooked. The paper will outline the current approach to strategic patenting that considers this practice lawful, and will provide arguments for the intervention of competition law. This, in turn, will open the possibility for competition authorities to investigate this practice in order to prevent its harmful effect on innovation and consumer welfare. Moreover, while patent law may provide certain mechanisms to deal with strategic patenting, such as raising the bar for patentability of pharmaceutical follow-on inventions,Footnote13 these tools may not be effective in all cases. Therefore, as will be explained further, competition law may be a more suitable tool to address the negative effects of strategic patenting.Footnote14 The article will be organised as follows. It will first discuss the complex structure of the pharmaceutical industry, focusing on its key players for the purpose of this article: originators and generic companies. It will further explore patenting practices employed by pharmaceutical companies and will define the notion of strategic patenting. The article will then argue that the latter strategy is against the rationale of patent and competition laws, as it stifles competition by impairing incentives to innovate of both originators and generic companies. Finally, it will discuss the current approach to strategic patenting that considers this practice lawful, and will argue that it should be subject to scrutiny under the rules of competition law, to address its negative effects. Pharmaceutical Innovation and Generic Competition in the Pharmaceutical Industry The pharmaceutical industry is unique in its complexity. It is characterised by heavy state regulation and, sometimes, by the competing interests of the pharmaceutical business and society. It also involves multiple actors, including originators,Footnote15 marketing authorisation bodies, generic companies,Footnote16 doctors, pharmacies and patients. Each of them plays their part in the lengthy and complicated process of transforming a chemical compound into an effective and affordable medicine, which is then prescribed, dispensed and consumed. In these complex relationships, the two key players have crucial roles. On the one hand, originators play an important role in developing new and improved medicines for the benefit of society. On the other hand, generic companies benefit society by supplying cheaper equivalents of the originators’ medicines, which leads to the reduction of drug prices and facilitates access to affordable medicines. When the interests of these two players are kept in balance, benefits are maximised for society, which receives innovative and improved medicines, as well as timely access to generic drugs. However, if the balance swings towards one of the players, then society loses out, as there will be insufficient access to either innovative or affordable medicines. Therefore, both pharmaceutical innovation and generic competition must be duly incentivised and protected. Moreover, these two elements of the pharmaceutical industry are constantly interacting and have a profound impact on each other. In particular, pharmaceutical innovation is the backbone of the pharmaceutical industry, in which originators play an important role. The process of drug development is long and complicated, requires significant investments, and bears considerable commercial risks.Footnote17 It is also highly regulated, including, among other things, the requirement for originators to obtain a special authorisation from a designated state authority to market a drug. Such marketing authorisations are granted to the originators only if they can prove that the drug is safe and effective, which typically requires lengthy and expensive clinical trials.Footnote18 In order to protect these significant efforts and investments, pharmaceutical companies rely heavily on the exclusivity granted by intellectual property rights, and in particular, patents.Footnote19 Patents provide a 20-year monopoly right, during which a pharmaceutical company enjoys market exclusivity and can charge a monopoly price for its products. Originators argue that strong patent protection is essential in order to recoup investments, as well as to incentivise them to engage in further innovation.Footnote20 Once such patent protection expires, however, other companies may develop generics of a branded drug, and start competing with the originator for the market. This is called generic competition. Generic drugs are bioequivalent versions of a branded drug that has lost its patent protection.Footnote21 It is estimated that the generic entry typically leads to, on average, an 80 per cent market share loss and a 20–30 per cent reduction of a drug price, with further price decreases with each additional generic entrant, leading, in some instances, to a fall in price of up to 90 per cent.Footnote22 A representative example of the effect of generic competition on the originators’ drug prices is the significant decrease in price and dramatic loss of profits by Eli Lilly. The expiration of a patent protecting its blockbusterFootnote23 antidepressant Prozac in 2001 resulted in a loss of almost 70 per cent of its market and $2.4 billion in annual U.S. sales.Footnote24 This effect of generic competition is beneficial for society, as it reduces the financial pressure on healthcare budgets and increases the accessibility of drugs. Patenting Practices by Pharmaceutical Companies As was mentioned above, generic competition is prevented during the life of a patent protecting an active compound of a drug (a so-called “basic” or “primary” patent).Footnote25 Such a basic patent covers an active ingredient itself and, therefore, provides the strongest protection for the product. Therefore, generic competition normally starts only after the basic patent expires, or if a generic company succeeds in invalidating it. While in the past pharmaceutical companies mainly protected their products with a single patent covering an active compound,Footnote26 they now increasingly seek additional patent protection on various aspects of a drugFootnote27 in order to protect their market position.Footnote28 Such additional patents are often called secondary patents.Footnote29 A pharmaceutical company may want to obtain secondary patents, which protect such aspects of a drug as, for example, its process of manufacture, formulation and/or specific form, etc. Therefore, even after the basic patent protecting an active compound expires, a drug may still be protected by other secondary patents. This may result in the extension of the scope and length of the protection of a product, especially if secondary patents have a later expiration date than a basic patent.Footnote30 This, in particular, may occur if, for example, the process of producing an active compound disclosed in the basic patent is sufficient only for reproducing this compound in a laboratory, but it is unsuitable for producing it on a large commercial scale.Footnote31 If the originator was able to secure a secondary patent that protects such a large scale manufacturing process, it would prevent generics from using this process for producing their generic versions of a drug; otherwise they would risk infringing this secondary patent.Footnote32 However, a unique feature of pharmaceuticals is that an active ingredient can be manufactured using different methods and processes, can exist in different forms or can be used in different formulations. Therefore, when a basic patent on an active ingredient expires, other companies can develop alternative methods of production, forms or formulations of this active compound and start competing with the originator company.Footnote33 While such patenting strategies by originators are lawful in principle, some of them may be problematic. In particular, in anticipation of the loss of patent protection, originators may engage in strategic patenting which artificially prevents generic competition and results in an extension of their market monopoly.Footnote34 Defining Strategic Patenting In its Sector Inquiry Report, the European Commission explained that the drug development process consists of three main stages: (i) the R&D stage, which ends with the launch of a drug on the market; (ii) the period between the launch and the patent expiry; and (iii) the period after the patent expiration, when generics can enter the market.Footnote35 During the second stage, i.e. after the launch of a drug, originators seek to maximise their income from the product in order to recoup their R&D investments and earn profits before the commencement of generic competition.Footnote36 It is also during this stage that pharmaceutical companies seek to prolong their market exclusivity. In recent years, pharmaceutical companies have been increasingly relying on the strategic use of the patent system to combat the pressure of generic competition. Such practices are often called “life cycle management” by originators and proponents of the practice. For example, as Burdon and Sloper explained, “[a] key element of any life cycle management strategy … is to extend patent protection beyond the basic patent term for as long as possible, by filing secondary patents which are effective to keep generics off the market”.Footnote37 However, critics have characterised the practice as “evergreening”,Footnote38 as it essentially evergreens the patent protection and the exclusivity of a product.Footnote39 For instance, Bansal et al. explain that evergreening “refers to different ways wherein patent owners take undue advantage of the law and associated regulatory processes to extend their IP monopoly, particularly over highly lucrative ‘blockbuster’ drugs, by filing disguised/artful patents on an already patent-protected invention shortly before expiry of the ‘parent’ patent”.Footnote40 During its investigation into the pharmaceutical industry, the European Commission found that the number of patents granted and pending applications significantly increases with the value of a drug, i.e. “blockbuster medicines can even be protected by up to nearly 100 INNFootnote41-specific EPO patented bundles and applications …, which in one particular case led to 1,300 patents and applications across all the EU Member States”.Footnote42 The Commission also found that the ratio of primary to secondary patents is 1:7, where the latter “mostly concern formulations, processes and non-formulation products…, such as salts, polymorphic forms, particles, solvates and hydrates”.Footnote43 As a result, the Commission concluded that the practice of “maximising patent coverage in such a way is the creation of a web of patents”, which affects the generics’ ability to “develop a generic version of the medicine in form of a salt, crystalline or amorphous form”, because it “would inevitably infringe a patent (for example, a patent for the relevant salt, crystalline or amorphous form of the medicine)”.Footnote44 Each of such patents would typically have a later expiration date, which effectively extends a period of market exclusivity beyond the expiration of a basic patent.Footnote45 In addition, most of these patents that protect such follow-on modifications are so-called “sleeping” patents, i.e. patents which a company has no intention of commercialising.Footnote46 Moreover, such modifications may provide little or no therapeutic benefits to the patient compared to the original drug.Footnote47 Nevertheless, such patents allow originators to secure the most efficient, broadest and longest possible protection for their successful products.Footnote48 The denser the web of secondary patents, the more difficult it is for generics to develop their generic equivalents, even if they know that only a few patents of a large portfolio would, in fact, be valid and infringed by their products.Footnote49 Despite such knowledge, it is impossible to be certain before introducing a generic whether this will be the case and, thus, whether the generic company will be subject to injunctions preventing the sale of their generic products.Footnote50 Such practice, therefore, provides an appreciable competitive advantage for originators by creating a significant legal and commercial uncertainty for generics in relation to the possibility of their market entry.Footnote51 This paper argues that such a strategic use of the patent system by pharmaceutical companies is against the shared goal of patent and competition laws of facilitating innovation for the benefit of society. As will be explained further, in addition to a more immediate negative effect in the form of high drug prices, strategic patenting may also impair innovation by reducing originators’ incentives to innovate, and affecting generics’ ability to develop alternative generic products. Strategic patenting, therefore, may enable originators to avoid competitive pressures by preventing generic competition without a need to engage in genuine innovation. Strategic Patenting Contradicts the Rationale of the Patent System and Competition Law In the competitive markets, the success of a company is based on its business performance.Footnote52 In order to compete on performance by “offering better quality and a wider choice of new and improved goods and services”Footnote53 firms must innovate. Realising the importance of protecting innovation, which is considered to be the main driver of economic growth,Footnote54 states have put in place various mechanisms to ensure a suitable environment for its advancement. These include granting the property rights to the results of innovation in the form of patents, as well as implementing competition law rules to stimulate dynamic competition.Footnote55 Specifically, one of the main justifications for the patent system is the encouragement of innovationFootnote56 that serves as an engine for economic growth and development.Footnote57 The patent system pursues this aim by offering the patent owners a period of exclusive rights as a reward for their innovative efforts and an incentive to engage in further innovation.Footnote58 Therefore, intellectual property rules, and patents in particular, are seen as an essential element of undistorted competition on the internal market.Footnote59 These exclusive rights are considered to be a necessary incentive to invest in R&D and innovation, particularly in such sectors as pharmaceuticals, where the R&D costs are high, but the costs of copying the R&D results are marginal.Footnote60 At the same time, the “innovation theory”, embodied in the EU competition law rules and policy, is designed to stimulate innovation by fostering competition on the markets.Footnote61 The competition law rules keep markets innovative by maintaining effective competition through preventing the foreclosure of markets and maintaining access to them.Footnote62 The rationale is that firms react to pressures of competition by continuously seeking to innovate.Footnote63 Therefore, patent and competition laws complement each other, as on the one hand, existing competition creates pressures on firms, forcing them to innovate, the so-called “stick”, while on the other hand, patent law provides a “carrot” in the form of the exclusive right, thus inducing innovators to innovate.Footnote64 These two bodies of laws are seen as “complementary efforts to promote an efficient marketplace and long-run, dynamic competition through innovation”.Footnote65 As the European Commission noted “both intellectual property rights and competition are necessary to promote innovation and ensure a competitive exploitation thereof”.Footnote66 These two bodies of laws, therefore, have the same fundamental goal of enhancing innovation for the benefit of consumer welfare. Importantly, patent and competition laws are designed to stimulate not only innovation of “pioneer” innovators, but they are also aimed at facilitating follow-on innovation.Footnote67 Patent law contains provisions that require inventors to disclose information about their inventions, as well as providing exceptions such as experimental use and compulsory licensing, which allow third parties to access the inventions still under patent protection.Footnote68 Therefore, along with pioneer innovators, the rationale of incentives to innovate in patent law also applies to follow-on innovators, balancing the interests of these two types of inventors.Footnote69 Similarly, competition law aims at stimulating all types of innovation, including follow-on innovation. On the other hand, EU competition law proscribes practices that reduce incentives to innovate both for “pioneer” and follow-on innovators. This is enshrined in Art. 102(b) TFEU, which prohibits abuses that consist of, inter alia, limiting technological development. For example, in AstraZeneca the General Court considered that the company’s practice of misusing the patent system had the potential of reducing its incentives to innovate and was anticompetitive.Footnote70 In MagillFootnote71 and Microsoft,Footnote72 the courts found that the IP rights owners abused their dominant positions by blocking innovation of their potential competitors. More recently, several decisions by the European Commission also emphasised the importance of protecting innovation. In January 2018, the Commission fined QualcommFootnote73 €997 million for abusing its market dominance in LTEFootnote74 baseband chipsets.Footnote75 The Commission considered that the exclusivity payments that Qualcomm paid to Apple denied rivals the possibility to compete on the merits, and deprived European consumers of genuine choice and innovation.Footnote76 Furthermore, in July 2018, the Commission found in Google Android that Google abused its dominant position, and fined the company €4.34 billion for anticompetitive restrictions it had imposed on mobile device manufacturers and network operators to strengthen its dominant position in general internet search.Footnote77 The Commission considered that Google’s restrictive practices denied other companies the chance to compete on the merits and innovate.Footnote78 Finally, in 2017 the Commission issued its decision, in which it took the view that Amazon abused its dominant positions on the markets for the retail distribution of e-books by inserting the so-called “parity clauses” in the agreements with its e-book suppliers.Footnote79 It concluded that these clauses had the potential of reducing the incentives to innovate both by e-book suppliers and retailers.Footnote80 These decisions demonstrate that the European Commission recognises the fundamental importance of protecting innovation. They confirm that strategies that are capable of stifling innovation and reducing the incentives to innovate may constitute an abuse of dominance under Art. 102 TFEU. It is argued in this article that, along with the practices condemned by the Commission in the decisions discussed above, strategic patenting can also harm innovation by impairing incentives to innovate of both originators and generic companies, and therefore should raise competition law concerns. Strategic Patenting Impairs Originators’ Incentives to Innovate While originator companies typically argue that the competition law intervention into their patenting practices will reduce their incentives to innovate,Footnote81 this article asserts that strategic patenting itself reduces originators’ incentives. Thus, in a properly functioning system, when a patent protecting a product is close to expiration the originator would be encouraged to innovate further in order to introduce a new product on the market and maintain its competitive position. However, by engaging in strategic patenting, the originator’s incentive to innovate diminishes as it enjoys its monopoly position by merely procuring numerous secondary patents that shield its current product from generic competition. Therefore, when companies engage in such strategic patenting, they are merely protecting themselves from the competitive pressures that competition law aims to establish. Maintaining that this practice is lawful, originators argue that strong patent protection is essential for recouping their investments, as well as for incentivising them to engage in further innovation.Footnote82 Such a position may find some support in the arguments put forward by Joseph Schumpeter and his followers, who claimed that since monopoly increases the reward of the innovator, monopolists are more prone to innovation.Footnote83 However, as Lowe noted:Footnote84 the empirical evidence of the past few decades has worked against Schumpeter and in favor of Kenneth Arrow, who contends that in favoring monopolies Schumpeter underestimated the incentives for innovation that competition can offer. Monopolists tend to want to keep their monopolies by resorting to any measures that can keep new entrants out. Firms under competitive pressure from actual or potential competition, on the other hand, are less complacent and know that inventing a new product is their best strategy for maintaining and increasing their market share. In the same vein, the Commission emphasises the importance of competition for the incentives to innovate, stating that: “[r]ivalry between undertakings is an essential driver of economic efficiency, including dynamic efficiencies in the form of innovation. In its absence the dominant undertaking will lack adequate incentives to continue to create and pass on efficiency gains.”Footnote85 Evidence from the pharmaceutical industry confirms that strategic patenting reduces incentives to engage in genuine and meritorious innovation. In many cases, strategically accumulated secondary patents are of marginal quality and are typically the result of routine research activities.Footnote86 For example, in Perindopril the European Commission revealed that most of the secondary patents, procured as part of the originator company’s anti-generic strategy, were seen by the company as “blocking” or “paper”, some of which it considered involved “zero inventive step”Footnote87 and a purely editorial task.Footnote88 Moreover, these follow-on pharmaceutical inventions are specifically timed around the expiration of the basic patent and can be developed on demand.Footnote89 In AstraZeneca the Commission noted that the company designed to “[f]ile a patent-cloud of mixtures, uses, formulations, new indications, and chemistry” in relation to its blockbuster product omeprazole to slow down generic entry at a specifically defined time, close to the expiration of the basic patent.Footnote90 The main aim of these patents is to increase uncertainty for generic companies as to the possibility of their market entry.Footnote91 Therefore, while many of these secondary patents may be trivial and potentially invalid, the originator pursues them to protect its current successful product from generic competition.Footnote92 Even if a company continues to engage in innovation in parallel to pursuing strategic patenting, it still protects itself from the pressures of competition, which would have forced the company to innovate faster and would thus provide consumers with better products and/or access to cheaper generic versions earlier. As Ullrich argues:Footnote93 A slowdown in the transition of the new medicines from the protected status of a proprietary medicine to the status of generic products manufactured and distributed in open competition does not simply mean a loss of static efficiency, namely a loss of consumer well-being due to a slowdown in the reduction of process. Rather, such a slowdown also involves the risk of a loss of dynamic efficiency in that it extends the duration of a monopoly rent situation, thus reducing the pressure to innovate more quickly. Following the rationale of the General Court’s statement in AstraZeneca, the practice of the originator that extends its market monopoly by relying on the patent system “potentially reduces the incentive to engage in innovation, since it enables the company in a dominant position to maintain its exclusivity beyond the period envisaged by the legislator”.Footnote94 Such practices, according to the Court, act “contrary to the public interest”.Footnote95 Therefore, the practice of strategic patenting that protects originators’ monopolies from competitive pressures and significantly reduces their incentives to engage in genuine innovation is contrary to the rationale of the patent system, has a significant negative effect on competition and should raise competition law concerns. Strategic Patenting Impairs Follow-on Innovation of Generic Companies Strategic patenting also has a chilling effect on follow-on innovation by generic competitors in the form of developing alternative versions of an off-patent compound. As was discussed earlier, the expiry of a basic patent that protects an active compound facilitates generic competition. This is because even if the product is still protected by process, specific form or formulation patents, generic companies may develop alternative ways of producing or formulating the product and start competing with the originator. In the absence of strategically accumulated patents by the originator, generic companies are typically open to innovating to launch alternative generic products as soon as the basic patent expires. However, by pursuing strategic patenting, originators may discourage generics from engaging in follow-on innovation because of the uncertainty about the patent protection and a fear of infringing on one of the numerous patents.Footnote96 In its Sector Inquiry Report, the Commission cited the following quote from one of the originators: The entire point of the patenting strategy adopted by many originators is to remove legal certainty. The strategy is to file as many patents as possible on all areas of the drug and create a “minefield” for the generics to navigate. All generics know that very few patents in that larger group will be valid and infringed by the product they propose to make, but it is impossible to be certain prior to launch that your product will not infringe and you will not be the subject of an interim injunction.Footnote97 Therefore, as a result of creating an impenetrable ring of patent protection by the originator,Footnote98 generic competitors may be prevented from developing alternative generic versions of an off-patent compound. One of the examples revealed by the Commission during its Pharmaceutical Sector Inquiry was the filing by an originator company of “more than 30 patent families translating into several hundreds of patents in the Member States in relation to one product”, many of which were filed after the introduction of the product.Footnote99 This affected the intentions of several generic companies that planned to develop and bring their generic versions of the original product to the market.Footnote100 As a result, in addition to the already high barriers to entry into the pharmaceutical market due to patents that protect an existing product and the need to obtain a marketing authorisation, strategic patenting raises these entry barriers further, making it very difficult for generic companies to overcome them. This strategy, therefore, “may without further enforcement action by originator companies, … delay generic entry until the patent situation is clearer or even discourage more risk-sensitive generic companies from entering altogether”.Footnote101 Consequently, the fact that actual or potential competitors of originators would not be able to develop alternative generic products means that no one could enter the market and challenge originators’ monopoly positions. This results in a weakening of competition in the relevant market and a strengthening of the originator’s already dominant position. As Maggiolino put it, “patent accumulation … may work as a pre-emptive entry-deterrence strategy to protect monopoly power and … lower consumer welfare by allowing dominant firms to keep on charging over-competitive prices”.Footnote102 Therefore, when an array of accumulated secondary patents “blocks monopolists’ rivals from producing follow-on innovations, this strategy prevents the whole society from enjoying … these further innovations”.Footnote103 While practices that facilitate innovation are encouraged by competition law, practices that are aimed at blocking follow-on innovation by competitors should raise competition law concerns.

#### Future diseases are coming- the aff sets a precedent for medicine sharing that is key to solve.

Brink Lindsey, June 3, 2021, Brookings, “Why intellectual property and pandemics don’t mix”, [https://www.brookings.edu/blog/up-front/2021/06/03/why-intellectual-property-and-pandemics-dont-mix/] mc

Although focusing on these immediate constraints is vital, we cannot confine our attention to the short term. First of all, the COVID-19 pandemic is far from over. Although Americans can now see the light at the end of the tunnel thanks to the rapid rollout of vaccines, most of the world isn’t so lucky. The virus is currently raging in India and throughout South America, overwhelming health care systems and inflicting suffering and loss on a horrific scale. And consider the fact that Australia, which has been successful in suppressing the virus, recently announced it was sticking to plans to keep its borders closed until mid-2022. Criticisms of the TRIPS waiver that focus only on the next few months are therefore short-sighted: this pandemic could well drag on long enough for elimination of patent restrictions to enable new vaccine producers to make a positive difference. Furthermore, and probably even more important, this is almost certainly not the last pandemic we will face. Urbanization, the spread of factory-farming methods, and globalization all combine to increase the odds that a new virus will make the jump from animals to humans and then spread rapidly around the world. Prior to the current pandemic, the 21st century already saw outbreaks of SARS, H1N1, MERS, and Ebola. Everything we do and learn in the current crisis should be viewed from the perspective of getting ready for next time. THE NATURE OF THE PATENT BARGAIN When we take the longer view, we can see a fundamental mismatch between the policy design of intellectual property protection and the policy requirements of effective pandemic response. Although patent law, properly restrained, constitutes one important element of a well-designed national innovation system, the way it goes about encouraging technological progress is singularly ill-suited to the emergency conditions of a pandemic or other public health crisis. Securing a TRIPS waiver for COVID-19 vaccines and treatments would thus establish a salutary precedent that, in emergencies of this kind, governments should employ other, more direct means to incentivize the development of new drugs.

**Future pandemics will cause extinction – it only takes one ‘super-spreader’.**

**Bar-Yam 16** Yaneer Bar-Yam 7-3-2016 “Transition to extinction: Pandemics in a connected world” <http://necsi.edu/research/social/pandemics/transition> (Professor and President, New England Complex System Institute; PhD in Physics, MIT)//Elmer

Watch as one of the more aggressive—brighter red — strains rapidly expands. After a time it goes extinct leaving a black region. Why does it go extinct? The answer is that it spreads so rapidly that it kills the hosts around it. Without new hosts to infect it then dies out itself. That the rapidly spreading pathogens die out has important implications for evolutionary research which we have talked about elsewhere [1–7]. In the research I want to discuss here, what we were interested in is the effect of adding long range transportation [8]. This includes natural means of dispersal as well as **unintentional dispersal by humans**, like adding airplane routes, which is being done by real world airlines (Figure 2). When we introduce long range transportation into the model, the success of more aggressive strains changes. They can use the **long range transportation** to find new hosts and **escape local extinction**. Figure 3 shows that the more transportation routes introduced into the model, the **more higher aggressive pathogens are able to survive and spread**. As we add more long range transportation, there is a critical point at which pathogens become so aggressive that **the entire host population dies**. The pathogens die at the same time, but that is not exactly a consolation to the hosts. We call this the phase transition to **extinction** (Figure 4). With increasing levels of global transportation, **human civilization** may be approaching **such a critical threshold**. In the paper we wrote in 2006 about the dangers of global transportation for pathogen evolution and pandemics [8], we mentioned the risk from Ebola. Ebola is a horrendous disease that was present only in isolated villages in Africa. It was far away from the rest of the world only because of that isolation. Since Africa was developing, it was only a matter of time before it reached population centers and airports. While the model is about evolution, it is really about which pathogens will be found in a system that is highly connected, and Ebola can spread in a highly connected world. The traditional approach to public health uses historical evidence analyzed statistically to assess the potential impacts of a disease. As a result, many were surprised by the spread of Ebola through West Africa in 2014. As the connectivity of the world increases, past experience is not a good guide to future events. A key point about the phase transition to extinction is its **suddenness**. Even a system that seems stable, **can be destabilized** by a few more long-range connections, and connectivity is continuing to increase. So how close are we to the tipping point? We don’t know but it would be good to find out before it happens. While Ebola ravaged three countries in West Africa, it only resulted in a handful of cases outside that region. One possible reason is that many of the airlines that fly to west Africa stopped or reduced flights during the epidemic [9]. In the absence of a clear connection, public health authorities who downplayed the dangers of the epidemic spreading to the West might seem to be vindicated. As with the choice of airlines to stop flying to west Africa, our analysis didn’t take into consideration how people respond to epidemics. It does tell us what the outcome will be unless we respond fast enough and well enough to stop the spread of future diseases, which may not be the same as the ones we saw in the past. As the world becomes more connected, the dangers increase. Are people in western countries safe because of higher quality health systems? Countries like the U.S. have highly skewed networks of social interactions with some very highly connected individuals that can be **“superspreaders.”** The chances of such an individual becoming infected may be low but events like a mass outbreak pose a much **greater risk** if they do happen. If a sick food service worker in an airport infects 100 passengers, or a contagion event happens in mass transportation, **an outbreak could very well prove unstoppable**.

## Contention 2

#### IP is the main reason for the opioid crisis – 3 warrants

#### Daniel J Hemel, Lisa Larrimore Ouellete, “ Innovation institutions and the opioid crisis, June 9th 2020, [https://academic.oup.com/jlb/article/7/1/lsaa001/5854401] // Swickle// MAK Recut 8/25/21

How did opioids overwhelm a nation well aware of their addictive properties, claiming victims across the socioeconomic spectrum? To understand that, one must understand not only how opioid manufacturers aggressively marketed their wares and why physicians profligately prescribed these drugs but also why alternative pain management strategies failed to emerge and why opioid antidotes and abuse treatments were so much slower to spread. Purdue Pharma and ‘pill mills’ play a part in this story,18 but so does Medicaid’s ‘best price’ mandate and the National Institutes of Health’s (NIH) allocation of research funding. Comprehending the origins and persistence of the crisis requires a deep dive into the organizations and policies that drove the opioid wave as well as those that failed to produce a robust response. This article takes up that task. We suggest that the opioid epidemic is, in important respects, a disease of design. By this, we do not mean to suggest that the opioid crisis is the outgrowth of any single person’s grand plan. What we mean instead is that the design of institutions created conditions that allowed the crisis to arise and proliferate. We focus in particular on the design of innovation institutions—the legal arrangements that structure the production and allocation of knowledge goods.19 These include not only intellectual property law (patents, trade secrets, trademarks, regulatory exclusivity, etc.), but also the regulatory structures of the Food and Drug Administration (FDA) that determine whether knowledge goods can reach the market and the public benefit programs like Medicare and Medicaid that subsidize access to knowledge goods.20 The design of innovation institutions enabled the opioid epidemic in a number of ways. First, US innovation institutions produced powerful incentives for pharmaceutical firms to develop and commercialize highly addictive prescription pain medicines while imposing weaker constraints on the rollout of new and more addictive products. Second, systems for allocating access to medical technologies promoted the use of addictive medicines while creating barriers to access for addiction treatments. Third, innovation institutions allowed—and indeed, encouraged—manufacturers of opioid antidotes to charge sky-high prices for products that, if more widely accessible, likely **could have saved the lives of thousands** of opioid overdose victims. Fourth, even while encouraging the rapid diffusion of addictive opioids, innovation institutions failed to sufficiently reward firms for formulating, refining, or popularizing alternative treatments for addiction or for the underlying problem of chronic pain. Again, no one sat down and designed the system to work this way. But a series of institutional design choices—some conscious, others unconscious—allowed a perfect storm to coalesce. Some of these design flaws are relatively familiar. Intellectual property (IP) is an innovation institution that relies on signals of social value generated by market mechanisms, and market-generated signals can yield inefficient allocations of goods in the presence of externalities. Addictive pain medications generate negative externalities, and overdose and addiction treatments produce positive externalities, so it is perhaps unsurprising that America ended up with too many addictive prescription opioids and too few overdose and addiction treatments. Furthermore, IP distorts investments in research and development toward patentable technologies like pharmaceuticals,21 so it is no surprise that the patent-centric US innovation institutions resulted in a nation awash in pills but wanting for alternative pain treatments. In other respects, our examination of the role of innovation institutions in the opioid epidemic challenges traditional understandings of IP in particular and innovation institutions more broadly. The conventional view posits that IP policy’s fundamental trade-off is between innovation and access, or what economists call dynamic efficiency and allocative efficiency.22 IP incentivizes the development and commercialization of new and better products (the dynamic-efficiency benefit), but it also encourages IP holders to raise prices and restrict access (the allocative-inefficiency cost). The opioid epidemic presents a contrasting image of IP’s potential consumption-expanding effects. Opioid patents induced investments in efforts to create demand for products that consumers did not previously believe they wanted.23 This demand–creation effect was especially powerful because the patented product was habit-forming—Purdue’s lower prices for OxyContin in the short term could thus raise consumption in the long term.24 And this problem was exacerbated by the effective cost often being lowered through prescription drug insurance. Although scholars typically view the increased use of patented technologies as a welfare gain, the example of prescription opioids illustrates that patents’ consumption-expanding effects can be pernicious. Ideally, the government would counteract the biases embedded in the patent system through other innovation institutions, including regulations, taxes, and government-directed financial rewards such as grants and prizes. For example, market-based prizes in the form of insurance reimbursement policies appear to be a particularly promising intervention.25 But in the context of pain treatment, the federal government’s non-patent interventions exacerbated the skew toward prescription opioids and away from other pain management and mitigation strategies. At the same time, government policies created barriers that limited access to addiction treatments. Additionally, and paradoxically, the federal government’s subsidies for opioid antidotes may have reduced access to these lifesaving products, challenging the view that demand-side subsidies are a solution to the patent system’s pitfalls. Recognizing the role of America’s innovation institutions in the opioid epidemic helps inform the search for paths out of the current crisis, but it is essential to emphasize that no magic-bullet policy will bring the opioid epidemic to an end. The proliferation of prescription opioids was both a function of incentives generated by the current innovation ecosystem and a response—misguided as it may have been—to the very real problem of chronic pain afflicting an estimated one in five US adults.26 Any comprehensive effort to curtail opioid abuse will require interventions aimed at addressing chronic pain in ways that do not put patients at risk of addiction. The solution likely will involve regulated use of opioids by the populations for which they are justified as well as both existing and novel nonaddictive analgesics.27 At the same time, wider access to existing non-pharmacological pain treatments such as acupuncture, physical therapy, exercise, meditation, and cognitive behavioral therapy may do as much to mitigate the overuse of prescription opioids as any pharmacological leap.28 Moreover, any comprehensive national strategy to contain the opioid epidemic also will require interventions aimed at individuals already in the throes of addiction (medically known as ‘substance use disorder’ or ‘opioid use disorder’).29 Initiatives at the federal, state, and local levels suggest progress in this regard, though still on a scale far too small relative to the problem that they aim to solve.

#### Opioid induced Labor shortage leads to US economic downturns. The impact is housing and oil markets as well as wage drop and production disturbance

Anora M. Gaudiano 18, June 29, Market Watch, “How the opioid epidemic is exacerbating a U.S. labor-market shortage” [https://www.marketwatch.com/story/how-the-opioid-epidemic-is-exacerbating-a-us-labor-market-shortage-2018-06-28] AHS//VA//MAK Recut 8/24/21

**The number of people working** or looking for work i**n the U.S. is near a four-decade low**, and some experts believe that the opioid epidemic has played a key role in keeping a lid on participation. According to Jeff Korzenik, chief investment adviser at Fifth Third Bank, **the abuse of painkillers** thathas gripped the nationcould be **at the heart of** a weaker reading of **labor-force participation at 62.7%**, near its 40-year lows. The rate has hovered around this level for the past five yearseven as the unemployment rate steadily declined over this period to below 4% from 7% in 2013. For Korzenik, the reason for this shortage is clear. **“The opioid epidemic is preventing a huge portion of the population** that is sidelined **from joining the labor force because labor intensive jobs** are also the ones that **require workers who can pass drug tests,”** he said in an interview with MarketWatch. Korzenik said this **weakness** in the workforcecould **has negative implications for a U.S. economy** that some experts characterize as entering a waning period of expansion. There are currently 6.7 million job openings according to the latest Job Openings and Labor Turnover Survey. Y**et businesses have struggled to fill** these **positions**, implying that there aren’t enough skilled workers available. Alan Krueger, a Princeton University economist and former chair of President Barack Obama’s Council of Economic Advisers, found that more than 6 million men between ages 25 and 54 weren’t in the labor force and nearly half of those were taking pain medication, according to a 2016 study. Korzenik estimated that of those men**, 1.4 million could be working but** aren’t because they **abuse opioids and/or have criminal convictions related to the abuse.**  According to a 2016 report from the Department of Health and Human Services and the Substance Abuse and Mental Health Services Administration, more than 11 million people in the U.S. were addicted to opioids, which include prescription drugs. The Fifth Third Bank investment adviser doesn’t think the labor shortage has reached the acute phase yet, but the signs that it is approaching it are already evident, appearing in the housing and oil markets. “Home builders and **developers aren’t able to meet** the **demand from** the **growing population** because there are not enough construction workers. In fact80% of home builders report shortages in subcontractors,” Korzenick said. “At this stage of the economic cycle we would have expected a much faster pace of house building. Instead, **the lack of supply is pushing home prices higher,”** he added. Korzenik also suggested that the rally in oil prices US:CLU8 — 65% over the past 12 months — is partially driven by a shortage in truck drivers that is hampering production by U.S. producers. **“The oil** patch is an **industry** that **relies heavily on trucking,** either to move equipment or goods **and** right now **there is an acute shortage of truck drivers.** Men, who traditionally fill these positions are not able to pass drug tests,” Korzenik said. Tight labor markets, often associated with a peak of economic cycles, in the past have pushed wages higher and lured more people from the sidelines, thus pushing LFP rate higher. But not this time. Wage increases have been nearly nonexistent. According to the BLS, from May 2017 to May 2018, real average hourly earnings were unchanged, on a seasonally adjusted basis. “The labor shortage is creating bottlenecks in production. We are not that concerned about wage growth and higher labor costs, as productivity growth will offset that, but we are concerned about disruption to production,” Korzenik said.

#### The opioid crisis devastates national security and readiness

Xu 2018 - U.S. Air Force officers  
Ming and Jonathan Sawtelle, "Opioids: A Dark Allure With Deep National Security Implications," Feb 19, https://www.realcleardefense.com/articles/2018/02/19/opioids\_a\_dark\_allure\_with\_deep\_national\_security\_implications\_113074.html

The American opioid crisis is a slow burning rot with deep national security implications. The dark allure of opium--the strongest, most addictive, and now most accessible depressants ever known—erodes communities and incurs economic losses. The crisis, causing 63,600 deaths in 2016 and 52,000 in 2015, is bestowing quantifiable and devastating harm to children, friends, family and communities into the next generation.[i] Strained morgues and burgeoning orphanages are monuments to families eternally separated and communities at a loss for solutions. Healthcare costs compound losses of workforce productivity and tax flows. Unaddressed, these local tragedies will culminate in a reduction of national military readiness for years to come—even as China, the primary source of the dangerous opioid fentanyl rises to power parity with the United States. Able-bodied volunteers underwrite military readiness. Even before the crisis, qualified or interested candidates are a slim minority. The U.S. Defense Department says, “71% of America’s 34 million 17-24 year-old population could not qualify medically for military service.”[ii] Less than 1% are actually interested, and only .5% of America’s population actually serve.[iii] Opioid-related deaths and related addictions are increasing slightly in the 17-24 year-old population, chipping away at this already narrow recruiting pool. [iv] The future looks bleak. America’s labor force, 25-44 year-olds, the age group most likely to be today’s parents of tomorrow’s recruits, are leading the stats in the most number of opioid-related deaths, most reported addictions, and greatest percentage increase in both categories each year since 2015.[v] Consider this devilish effect of opioid addiction on recruiting: A small business in northeast Rustbelt Ohio actually has a hiring problem—management is unable to find qualified workers who can pass the drug test.[vi] Recruiting stations nationwide may face the same issue in the coming decades as orphans in foster care struggle to achieve parody of stable upbringing, education, health and wellness of children raised in a family. While qualified volunteers guarantee the national security of the United States, it is backed by immense budgetary resources—both at risk. A Center for Disease Control report estimates “the [U.S.] economic burden of prescription opioid overdose, abuse, and dependence…to be $78.5 billion each year.[vii] Nationally, opioid tragedies cost state and local governments more than $7 billion in law enforcement budgets, court cases and incarceration. In 2013, Medicare and Medicaid spent $2.8 billion on substance abuse treatment. Center for Disease Control data from 2001 to 2012 estimates in-patient admission costs increased $50.1 million per year for heroin and opioid addicts, and an increase in hospitalization costs of $700 million annually.[viii] A study by Regional Economic Modeling Inc. estimated opioid abuse reduced workforce productivity by $40 billion[ix], decreasing tax revenues even as the federal budget and national debt reach an all-time high. Any additional decrease in tax revenue is in direct competition with existing defense and mandatory health care spending. The outlook is dark, the prospects grim, but the U.S. can draw from recent history to see the potential national security risks of an entire country recently seduced by opiates. America need only examine the roots of President Xi Jinping’s “China Dream” to garner the historical cautionary tale on a population succumbed to the dark allure. Behind China’s current rapidly rising economy and military modernization lay the Century of Humiliation: one hundred years marked by foreign occupations, civil wars, and the loss of national sovereignty. Opium’s role in the downfall of the last imperial dynasty made its people destitute, subjugated to foreign will, serves as the impetus for the modern drive to make China great again. In the mid-19th Century, opium sales reversed the trade-deficit between the Qing dynasty and the British by an astounding 300%.[x] The downturn of silver in Qing coffers stifled innovation and eroded military readiness. A dulled military-edge resulted in the loss of the first Opium war and a series of foreign occupations.[xi] Drug related corruption in the ruling class eroded governing effectiveness, and civil wars erupted. Opium addiction corrupted every level of Chinese society, and its downfall was a fate the population, once seduced, struggled for one hundred years to overcome.

#### Readiness is key to effective deterrence – that solves existential great power wars

Dowd, 2015 (Alan W., Senior fellow with the Sagamore Institute for Policy Research and Senior Fellow at the Fraser Institute, “Shield & Sword: The Case for Military Deterrence”, Providence Mag, 12/31/2015, https://providencemag.com/2015/12/shield-sword-the-case-for-military-deterrence/)//JBS

It’s a paradoxical truth that military readiness can keep the peace. The Romans had a phrase for it: Si vis pacem, para bellum. “If you wish for peace, prepare for war.” President George Washington put it more genteelly: “There is nothing so likely to produce peace as to be well prepared to meet an enemy.” Or, in the same way, “We infinitely desire peace,” President Theodore Roosevelt declared. “And the surest way of obtaining it is to show that we are not afraid of war.” After the West gambled civilization’s very existence in the 1920s and 1930s on hopes that war could somehow be outlawed, the men who crafted the blueprint for waging the Cold War returned to peace through strength. Winston Churchill proposed “defense through deterrents.” President Harry Truman called NATO “an integrated international force whose object is to maintain peace through strength…we devoutly pray that our present course of action will succeed and maintain peace without war.”[iii] President Dwight Eisenhower explained, “Our arms must be mighty, ready for instant action, so that no potential aggressor may be tempted to risk its own destruction.” President John Kennedy vowed to “strengthen our military power to the point where no aggressor will dare attack.” And President Ronald Reagan steered the Cold War to a peaceful end by noting, “None of the four wars in my lifetime came about because we were too strong.” Reagan also argued, “Our military strength is a prerequisite for peace.”[iv] Even so, arms alone aren’t enough to deter war. After all, the great powers were armed to the teeth in 1914. But since they weren’t clear about their intentions and treaty commitments, a small crisis on the fringes of Europe mushroomed into a global war. Neither is clarity alone enough to deter war. After all, President Woodrow Wilson’s admonitions to the Kaiser were clear, but America lacked the military strength at the onset of war to make those words matter and thus deter German aggression. In other words, America was unable to deter. “The purpose of a deterrence force is to create a set of conditions that would cause an adversary to conclude that the cost of any particular act against the United States of America or her allies is far higher than the potential benefit of that act,” explains Gen. Kevin Chilton, former commander of U.S. Strategic Command. It is a “cost-benefit calculus.”[v] So, given the anemic state of America’s military before 1917, the Kaiser calculated that the benefits of attacking U.S. ships and trying to lure Mexico into an alliance outweighed the costs. That proved to be a grave miscalculation. In order for the adversary not to miscalculate, a few factors must hold. First, consequences must be clear, which was not the case on the eve of World War I. Critics of deterrence often cite World War I to argue that arms races trigger wars. But if it were that simple, then a) there wouldn’t have been a World War II, since the Allies allowed their arsenals to atrophy after 1918, and b) there would have been a World War III, since Washington and Moscow engaged in an unprecedented arms race. The reality is that miscalculation lit the fuse of World War I. The antidote, as alluded to above, is strength plus clarity.A second important factor to avoid miscalculation: The adversary must be rational, which means it can grasp and fear consequences. Fear is an essential ingredient of deterrence. It pays to recall that deterrence comes from the Latin dēterreō: “to frighten off.”[vi] Of course, as Churchill conceded, “The deterrent does not cover the case of lunatics.”[vii] Mass-murderers masquerading as holy men and death-wish dictators may be immune from deterrence. (The secondary benefit of the peace-through-strength model is that it equips those who embrace it with the capacity to defeat these sorts of enemies rapidly and return to the status quo ante.) Third, the consequences of military confrontation must be credible and tangible, which was the case during most of the Cold War. Not only did Washington and Moscow construct vast military arsenals to deter one another; they were clear about their treaty commitments and about the consequences of any threat to those commitments. Recall how Eisenhower answered Soviet Premier Nikita Khrushchev’s boast about the Red Army’s overwhelming conventional advantage in Germany: “If you attack us in Germany,” the steely American commander-in-chief fired back, “there will be nothing conventional about our response.”[viii] Eisenhower’s words were unambiguously clear, and unlike Wilson, he wielded the military strength to give them credibility.Discussing military deterrence in the context of Christianity may seem incongruent to some readers. But for a pair of reasons it is not. First, deterrence is not just a matter of GDPs and geopolitics. In fact, scripture often uses the language of deterrence and preparedness. For example, in the first chapter of Numbers the Lord directs Moses and Aaron to count “all the men in Israel who are twenty years old or more and able to serve in the army.” This ancient selective-service system is a form of military readiness. Similarly, I Chronicles 27 provides detail about the Israelites’ massive standing army: twelve divisions of 24,000 men each. II Chronicles 17 explains the military preparations made by King Jehoshaphat of Judah, a king highly revered for his piety, who built forts, maintained armories in strategically located cities “with large supplies” and fielded an army of more than a million men “armed for battle.” Not surprisingly, “the fear of the Lord fell on all the kingdoms of the lands surrounding Judah, so that they did not go to war against Jehoshaphat.” In the New Testament, Paul writes in Romans 13 that “Rulers hold no terror for those who do right, but for those who do wrong…Rulers do not bear the sword for no reason.” Again, this is the language of deterrence. Those who follow the law within a country and who respect codes of conduct between countries have nothing to fear. Those who don’t have much to fear. Likewise, to explain the importance of calculating the costs of following Him, Jesus asks in Luke 14, “What king would go to war against another king without first sitting down to consider whether his 10,000 soldiers could go up against the 20,000 coming against him? And if he didn’t think he could win, he would send a representative to discuss terms of peace while his enemy was still a long way off.” In a sense, both kings are wise—one because he recognizes that he’s outnumbered; the other because he makes sure that he’s not. Put another way, both kings subscribe to peace through strength. Again, as with the Centurion earlier, Jesus could have rebuked the martial character of these kings, but he did not. This is not just description but commendation. We ignore their example at our peril. Secondly, it is not incongruent if we understand military deterrence as a means to prevent great-power war—the kind that kills by the millions, the kind humanity has not endured for seven decades. We know we will not experience the biblical notion of peace—of shalom, peace with harmony and justice—until Christ returns to make all things new. In the interim, in a broken world, the alternatives to peace through strength leave much to be desired: peace through hope, peace through violence, or peace through submission. But these options are inadequate.The sheer destructiveness and totality of great-power war testify that crossing our fingers and hoping for peace is not a Christian option. Wishful thinking, romanticizing reality, is the surest way to invite what Churchill called “temptations to a trial of strength.” Moreover, the likelihood that the next great-power war would involve multiple nuclear-weapons states means that it could end civilization. Therefore, a posture that leaves peer adversaries doubting the West’s capabilities and resolve—thus inviting miscalculation—is not only unsound, but immoral and inhumane—unchristian. “Deterrence of war is more humanitarian than anything,” Gen. Park Yong Ok, a longtime South Korean military official, argues. “If we fail to deter war, a tremendous number of civilians will be killed.”[ix]

#### Extinction – nuke war fallout creates Ice Age and mass starvation

Steven Starr 15. “Nuclear War: An Unrecognized Mass Extinction Event Waiting To Happen.” Ratical. March 2015. <https://ratical.org/radiation/NuclearExtinction/StevenStarr022815.html> TG

A war fought with 21st century strategic nuclear weapons would be more than just a great catastrophe in human history. If we allow it to happen, such a war would be a mass extinction event that [ends human history](https://ratical.org/radiation/NuclearExtinction/StarrNuclearWinterOct09.pdf). There is a profound difference between extinction and “an unprecedented disaster,” or even “the end of civilization,” because even after such an immense catastrophe, human life would go on. But extinction, by definition, is an event of utter finality, and a nuclear war that could cause human extinction should really be considered as the ultimate criminal act. It certainly would be the crime to end all crimes. The world’s leading climatologists now tell us that nuclear war threatens our continued existence as a species. Their studies predict that a large nuclear war, especially one fought with strategic nuclear weapons, would create a post-war environment in which for many years it would be too cold and dark to even grow food. Their findings make it clear that not only humans, but most large animals and many other forms of complex life would likely vanish forever in a nuclear darkness of our own making. The environmental consequences of nuclear war would attack the ecological support systems of life at every level. Radioactive fallout produced not only by nuclear bombs, but also by the destruction of nuclear power plants and their spent fuel pools, would poison the biosphere. Millions of tons of smoke would act to [destroy Earth’s protective ozone layer](https://www2.ucar.edu/atmosnews/just-published/3995/nuclear-war-and-ultraviolet-radiation) and block most sunlight from reaching Earth’s surface, creating Ice Age weather conditions that would last for decades. Yet the political and military leaders who control nuclear weapons strictly avoid any direct public discussion of the consequences of nuclear war. They do so by arguing that nuclear weapons are not intended to be used, but only to deter Remarkably, the leaders of the Nuclear Weapon States have chosen to ignore the authoritative, long-standing scientific research done by the climatologists, research that predicts virtually any nuclear war, fought with even a fraction of the operational and deployed nuclear arsenals, will leave the Earth essentially uninhabitable.

## Contention 3

#### IPR leads to BioD loss – Multiple warrants in both cards -

[1] Pamun 18’ (In partnership with United Nations Educational, Scientific, and Cultural Organization (UNESCO) and THIMUN, 2018). “PAMUN XVIII RESEARCH REPORT— QUESTION OF INTELLECTUAL PROPERTY AND BIODIVERSITY” [http://asp-edu.net/pamun/pamun2013/wp-content/uploads/2014/04/OK\_EDITED\_-UNCTAD-biodiversity-and-IP-1.pdf] AHS//MAK Accessed 8/23/21

<http://asp-edu.net/pamun/pamun2013/wp-content/uploads/2014/04/OK_EDITED_-UNCTAD-biodiversity-and-IP-1.pdf>

Biodiversity and its relationship with intellectual property: During the last few years, biodiversity has been lost **at an unprecedented rate** throughout the world in every ecosystem. According to the FAO, about 75% of the genetic diversity found in agricultural Page 4 of 16 | Research Report crops has been lost over the last century, and this phenomenon continues. It is imperative that we conserve agricultural biodiversity: higher biodiversity of agricultural crops helps increase yield stability and soil fertility and gives species the ability to adapt to changing conditions. High agricultural biodiversity also helps protect our health by ensuring sustainable production in medicinal plant use systems. Agricultural biodiversity loss and the present IPR legislation are inextricably tied. IPRs continue to homogenise agricultural production and medicinal plant use systems and could reduce crop variety development. Our health and our environment is negatively affected, and it is of utmost importance to conserve our agricultural biodiversity. Evolution of IPRs on biological resources As stated before, IPRs are rights to new ideas and information, which allow the creator to prevent the imitation or the commercial exploitation of his/her creations. IPRs have existed for centuries; however, the use of IPRs on living organisms such as GRs is a recent phenomenon. In 1930, the U.S. government passed the U.S. Plant Patent Act, which granted IPRs to new plant varieties with the exception of sexual and tuber-propagated plants. Other countries also extended such forms of IPRs, and in 1957, the International Union for the Protection of New Varieties of Plants (UPOV) was formed, which was established by the International Convention for the Protection of New Varieties of Plants that was signed in 1961. The convention was revised in 1972, 1978, and 1991 in Geneva, and each member state is expected to adopt laws that meet the requirements of the convention. With the latest revision in 1991, the convention recognizes new plant varieties as intellectual property and extended international PBRs. Furthermore, in 1972, the U.S. Supreme Court ruled that the patent claim made by the microbiologist Ananda Chakrabarty for a genetically engineered bacterial strain was permissible, which made it clear that anything man-made, including human genetic material, could be patentable. The legally binding TRIPS agreement in 1995 (explained in detail below) further imposed private IPRs on plant varieties, increasing the control of governments and large corporations over biogenetic resources. International Treaties and Agreements The link between IPRs and biodiversity has been shaped by numerous agreements and institutions. The Convention on Biological Diversity (CBD) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) are the two principal agreements on this issue. Moreover, organizations such as the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO) have also become more active in dealing with this issue, and various megadiverse countries (see Major Countries Involved for definition) such as India, Costa Rica, and Mexico are passing laws in order to deal with this issue. Research Report | Page 5 of 16 The most important agreement on the conservation of biodiversity is the Convention on Biological Diversity (CBD), which is often regarded as the founding document of global commitment to sustainable growth. The CBD is a legally binding, multilateral treaty signed on June 5th, 1992. It has been signed by 168 nations, 157 of which have ratified the convention. The convention has three main goals: the “conservation of biological diversity”; the “sustainable use of the components of biological diversity”; and the “fair and equitable sharing of the benefits arising out of the utilization of genetic resources”. The treaty recognizes the sovereign right of states over GRs, and it also demands the respect and preservation of associated traditional knowledge at the national level. In fact, article 8(j) of the CBD states: ““Each contracting party shall [...] respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices”, thus recognizing the collective rights of indigenous and local communities, and encouraging member nations to follow the ABS provisions of the agreement, which aim to share GRs equitably with the indigenous communities. Moreover, to improve the implementation of the CBD, two supplementary agreements to the CBD have been signed: the Cartagena Protocol of 2002 and the Nagoya Protocol of 2010. The Nagoya Protocol (Appendix IV), which is explained in the Previous Attempts to Solve the Issue section, deals with the implementation of the third objective: fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Another important legally binding agreement is the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) in 1995. All 162 members of the WTO are signatory states of the agreement. Before the TRIPS agreement was signed, IPRs were restricted within countries; however, with the national treatment article in the TRIPS agreement, every signatory state should ensure that the rights given by IPRs are applied to locals and foreigners alike. In relation to plant varieties, it is important to note that the TRIPS agreement requires that plant varieties, along with microorganisms and microbiological processes, be eligible for IPR protection. In article 27.3(b) of the TRIPS agreement, signatory member states are not permitted to exclude microorganisms and microbiological processes from patentability, and they are expected to provide protection of these new plant varieties through patents, or an “effective” sui generis system. In other words, the agreement requires an exclusive protection for plant varieties, be it in the form of patents or a new sui generis system, which the WTO decides is effective or not. Another form of protection that many developing countries are also adopting as a sui generis system is the model of plant variety protection that is provided by the UPOV Convention (PBRs), whose standards are pretty much equivalent to patent protection. Hence, the TRIPS agreement not only imposes exclusive, private IPRs on biological resources, but it also does not attempt to protect indigenous and local community knowledge. Unlike the CBD, which aims to protect TK and maintain biodiversity, the TRIPS agreement legitimizes the commercial use of biodiversity-related knowledge. However, the TRIPS agreement does require the review of Article 27.3(b)–the article that prohibits the Page 6 of 16 | Research Report exclusion of microorganisms from patentability and provides protection for plant varieties–which has facilitated discussion on the issues with the article (see ‘Previous Attempts’ for detailed information). It is also important to note that both agreements are highly flexible, even though they contradict each other in many aspects. Many articles of the TRIPS agreement can be used by indigenous communities to protect their interests. Article 8 allows members to protect public interest through legal measures and environmental protection could be justified as as being in "public interest". Moreover, article 27(2) allows members to exclude inventions from patentability to safeguard against "serious prejudice" to the environment. The CBD, on the other hand, ensures that it does not conflict with the implementation of any other international agreement. Article 22 of CBD states: “The provisions of this Convention shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity”. This article provides countries with a leeway; although both agreements are legally binding, countries can implement the TRIPS agreement without adhering to obligations of the CBD. Impacts of present IPR legislation Exploitation of traditional knowledge Existing IPR systems, particularly patents, increase the risk of exploitation of traditional knowledge. Existing IPRs are expensive and challenging to acquire, failing to provide local and indigenous communities incentives to protect or capitalize on their traditional knowledge even though traditional knowledge is often shared by all members of the community and passed through the generations. Commercial Exploitation of Plant Varieties and GRs: The TRIPS agreement is intended to provide private IPRs on any products, be they biogenetic resources or not, in order to ensure that trade goes smoothly and corporate interests are protected internationally. In the process, the agreement provides exclusive control of plant varieties to corporations and individuals that they have patented. The privatization of IPRs as a result of the TRIPS agreement **has caused commercial** and industrial **interests to control** the **resources of developing countries that are rich in biodiversity, leading to biological uniformity** and in turn biodiversity **loss** (explained below). Besides, these private commercial interests are encroaching upon common indigenous and local community knowledge, which is another negative impact of the TRIPS agreement. Biological Uniformity Research Report | Page 7 of 16 The present IPR legislation causes biological uniformity because of growing private commercial interests, which directly causes biodiversity loss. Countries that extend IPRs to plant varieties will be establishing an IPR system where few corporations and individuals prohibit others from making or using the protected variety or any product containing protected genetic information, and push its production for profits. Farmers will be faced with production restrictions, while scientists will be faced with research restrictions. All in all, the present IPR legislation not only discourages the growth of new and different plant varieties, but it also restricts researchers from freely using the genetic information for research into diseases or for making new and more effective plant varieties. Hence, this reduces the availability of biodiversity and leads to the homogenization of agricultural production and plant use systems. For example, Monsanto, an agrochemical and agricultural biotechnology corporation that is facing a surge of lawsuits, is also accused of biological uniformity. It owns such a large portion of the world's cotton seed supply that cotton farmers are not given access to non-GM cotton seeds. These farmers are also not allowed to save, reuse, or even study the seeds due to biotech IPR laws, greatly hindering natural diversity

#### This causes Extinction.

Schelske 20 Why managing biodiversity risk is critical for the global economy By [Oliver Schelske](https://www.swissre.com/profile/Oliver_Schelske/ip_bdeb3f), Natural Assets & ESG Research Lead, Swiss Re Institute & [Bernd Wilke](https://www.swissre.com/profile/Bernd_Wilke/ip_567f65), Senior Risk Manager, Group Risk Management Published on:23 Sep 2020 <https://www.swissre.com/risk-knowledge/mitigating-climate-risk/managing-biodiversity-risk-is-critical-for-global-economy.html>

Biodiversity and ecosystem services underpin our daily lives and many of our products and services. From the water we drink to the food we grow and the resources we use in manufacturing, we would be at a loss without Mother Nature. But from the wildfires raging in California to forest loss in the Amazon, it is clear many of these ecosystems are suffering. And as the United Nations points out in the promotion of its [2020 Biodiversity Summit](https://www.un.org/pga/74/united-nations-summit-on-biodiversity/), the COVID-19 pandemic has “further highlighted the importance of the relationship between people and nature”. “We are reminded that when we destroy and degrade biodiversity, we undermine the web of life and increase the risk of disease spillover from wildlife to people,” it says. Understanding the extent and impact of biodiversity and ecosystem decline is key to minimizing further damage, and making informed decisions that prioritise a more sustainable future. This is why the Swiss Re Institute has created the [Biodiversity Ecosystem Services (BES) Index](https://www.swissre.com/institute/research/topics-and-risk-dialogues/climate-and-natural-catastrophe-risk/expertise-publication-biodiversity-and-ecosystems-services.html). It brings together masses of data and research from scientists around the world to present a kilometre-by-kilometre view of the state of biodiversity-related ecosystem services. We can use this information to become more risk-aware, and inform sustainable future development. And this wealth of data for the first time gives insurers the possibility to adapt their future risk pricing, selection and products to reflect the evolving risks caused by the declining health of biodiversity and ecosystems. The insurance industry has begun to realise the impact of climate change and other environmental decline on risk profiles. And it has become apparent that the risks are both physical – for example, the increasing size and amount of pay-outs following hurricanes and tropical storms – as well as reputational. There is now a recognition that coal, oil and gas policies, for example, have an impact on external perceptions. But until now, there has been limited recognition or ability to quantify the changing risk profile of different locations. Swiss Re’s new tool takes us beyond the awareness stage and gives us information we can act on. As Oliver Schelske, environmental and business economist at Swiss Re Institute and co-author of the new study, explains: “Biodiversity and ecosystem services are the foundation for life. They underpin economic activity. Here, we are talking about the health of forests and other ecosystems and the plants and wildlife within them. It impacts processes like water purification, pollination and soil formation. This affects food security, fresh water, and also has cultural, religious, educational and aesthetic importance.” The index paints a grim picture. There are 39 of 195 countries with fragile ecosystems on more than 30% of their land. Among them are Malta, Israel, Cyprus, Bahrain and Kazakhstan. The risks presented by this weakening of the natural world vary country by country. And within countries too. Some economies are more dependent on ecosystem services than others – countries with high dependency on agriculture, forestry and fishing, for example, may be more at risk from a decline in the natural world. These include countries with huge and growing populations like Kenya, Vietnam, Pakistan, Indonesia and Nigeria. But while more diversified economies may feel less of a direct impact, they are far from immune. Everyone is affected by broad socio-economic vulnerabilities like food security and diversity, the ability to discover and develop new medicines, and water quality. The BES Index gives a detailed view of how the interplay of these factors affects the risk in any given location. This makes it possible for the insurance industry to incorporate biodiversity and ecosystem strengths and weaknesses into its risk selection and ultimately pricing in the future. This will make businesses and societies more resilient as they adapt and shift to make better use of resources and locations, influenced by premium prices and insurability. Bernd Wilke, senior emerging risk manager at Swiss Re and index co-author, says: “In the future the tool will allow the insurance industry to adjust and develop products and create nature-based solutions that take account of where in the world, on a square-kilometre scale, ecosystems are healthy or fragile. That information can be used to identify where to invest and where to restore.” He gives the example of property located near damaged mangroves and coral reefs, which might have higher premiums than that behind intact mangroves or reefs. These natural barriers provide crucial protection in areas that are more prone to flooding, erosion and tidal damage, and the tool can help promote identification and investment in them. Using the index can help insurers to not only make communities more resilient and better protected, but also promote the UN Sustainable Development Goals (SDGs) of Life on land, which Wilke says underpins all other SDGs. “If we don’t work with nature in a sustainable way, we don’t have the foundation for our economies and everything that depends on it,” he says. Biodiversity and ecosystem strength are particularly poignant in the midst of the COVID-19 pandemic. In fact, coronavirus could be a sentinel. All over the world, humans and animals are coming into closer contact than ever before. One of the largest potential reservoirs of future zoonotic diseases is in the rainforests of our world. And with deforestation we are making swift inroads into habitats. New roads are bringing greater connectivity to areas previously cut off. In the past, if a new disease was encountered somewhere remote it might have been days before an infected person reached the next tribe. Human expansion into wildlife areas, soaring globalisation and urbanisation, and risky nutrition patterns altogether have led to high-speed routes for future pandemics directly into our major cities. Conversely, making smart use of nature could help increase our resilience during future epidemic or pandemics. Schelske notes, "Sustainable exploration of nature can help us detect new medicine for current or future diseases. We have also seen that proximity and access to green areas in urban neighbourhoods has proven extremely important for mental health during the current pandemic." Like nothing else, the COVID-19 pandemic has created a sense of urgency around maintaining the healthy balance between humans and nature. As we all become increasingly aware of environmental changes, we will have a better foundation of understanding the costs of disrupting this delicate balance and putting a price on this in the future. Acting on this information is key to building a more sustainable and resilient future that benefits everyone.