## 1AC---Cancer

**LMICs** stands for **Low and Middle-Income Countries**.

#### Plan Text: Member nations of the World Trade Organization ought to reduce intellectual property protections for cancer medications.

## 1AC---Advantage

#### Lack of access to essential medicines ensures cancer will ravage developing countries---imperiling economic development AND burdening public health resources. The plan solves by compelling licensing of cancer medicines via TRIPs.

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Although low- and middle-income countries (LMICs) bear 75% of the cancer burden globally, their available resources to treat cancer constitute less than 5% of global health resources. This inequity makes it imperative to take appropriate measures to treat and prevent cancer in LMICs, which should include consideration of trade and patent policies. This article highlights some impediments to effective use of existing policies to promote access to treatment and prevention measures in LMICs and offers recommendations about next steps.

Introduction

Cancer incidence is rising globally, resulting in financial, physical, and emotional distress to families and burdening public health services. According to the World Health Organization (WHO), the global cancer burden was estimated to have risen from 14.1 million new cases in 2012 to 18.1 million new cases in 2018 and from 8.2 million deaths in 2012 to 9.6 million deaths in 2018.1 Low- and middle-income countries (LMICs) bear 75% of cancer deaths.2 Asia and Africa, for example, have a higher proportion of cancer deaths (7.3% and 57.3%, respectively) compared to their incidence (5.8% and 48.4%, respectively) than other countries due, in part, to enormous inequities in cancer treatment.3 Indeed, the available resources to treat cancer in LMICs compose less than 5% of the global share of resources for cancer control.4 Correspondingly, only 10% of children diagnosed with cancer in LMICs are cured compared with more than 80% of such children in high-income countries.4 A WHO finding that less than 30% of low-income countries report having treatment services available compared to more than 90% of high-income countries underscores the enormous [inequities in cancer treatment](https://journalofethics.ama-assn.org/article/overcoming-inequalities-affordable-care-act-and-cancer-treatment/2013-08) and access to cancer medications.5 These disparities make it critical to focus cancer control efforts on LMICs.

In these countries, many new cancer medications are exorbitantly expensive relative to individual income. For example, one company’s egregious original price tag of Rs 280 428 per month (about $5000 at that time) for sorafenib tosylate, a drug for treating primary kidney cancer and advanced liver cancer, was nearly 5 times higher than the median annual income in India.6 Like this drug, many cancer drugs are unaffordable for large number of patients diagnosed with cancer in poorer nations.

Efforts to effectively improve access to medicines by reducing costs of cancer medications should look to international trade agreements and, particularly, TRIPS flexibilities for compulsory license (explained below), which can (and should) be used to address health burdens, such as the HIV/AIDS epidemic. Just as in the case of an epidemic, efforts to address cancer should be mindful of the labor and economic loss that ensue when productive individuals are lost to disease. In order to be involved effectively in such efforts, the medical community must appreciate how international trade and patent prescriptions intersect with efforts to improve access to cancer medication, especially in LMICs where such access remains inadequate. The focus of this essay, therefore, is on how international patent law can help mitigate the cancer burden in LMICs.

Global Trade Policies and Cancer

The inclusion of intellectual property (hereafter, IP) within the global trade framework7 was a defining moment for [global access to medication](https://journalofethics.ama-assn.org/article/patents-pricing-and-access-essential-medicines-developing-countries/2009-07). In broad terms, IP rights are legal tools designed to result in public benefit by promoting private rights. Thus, IP rights recognize innovations by awarding monopoly rights to the creator as a means to incentivize creativity. In 1995, when the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS agreement),8 which forms a part of the larger World Trade Organization (WTO),9 became effective, it required all member states to provide a 20-year term of protection for all pharmaceutical innovations. The [TRIPS agreement](https://journalofethics.ama-assn.org/article/intellectual-property-and-access-medicine-poor/2006-12) provided limited flexibilities for countries to weigh IP rights against public health and developmental needs.8 Specifically, Article 31 of the TRIPS agreement allows for compulsory license, a mechanism that permits a third party to produce a patented product or process without the consent of the patent owner. The patent owner still retains the right to the patent and receives royalties for the products made under the compulsory licence. However, this provision allows a sovereign government to authorize the licensing of a patent to produce a generic version of the drug, enabling greater access to it during a public health crisis.

US actions have made countries hesitant to use compulsory licenses to increase access to and lower the cost of cancer medications.

Nevertheless, the inadequacies of the compulsory license during global public health crises—particularly the HIV/AIDS crisis—forced member states to adopt, in 2001, the Doha Declaration on the TRIPS Agreement and Public Health. The Doha Declaration affirms the right of member states to implement policies to enable access to medicines to address a national public health crisis.10 Thus, Article 31 of the TRIPS agreement in conjunction with the Doha Declaration reaffirms the rights of sovereign nations to “protect public health and enhance access to medicines.”11 Importantly, while the Doha Declaration reaffirmed member countries’ ability to compulsorily license a patent for the production of generic drugs to address a public health crisis, it underscored the existence of member countries that are unable to take advantage of the compulsory license because they lack the manufacturing capabilities to even produce generic medications. Hence, the WTO General Council, in 2005, adopted Article 31(bis),12 which allows for export of generic drugs from member countries that can produce licensed medication to member countries that lack manufacturing facilities but need the medication. Through this provision, the TRIPS agreement allows nations to act either individually or as a regional group in granting compulsory licenses to export pharmaceutical products to member countries with insufficient or no manufacturing capacities. However, the definition of what constitutes a national public health crisis has remained contentious.13

To date, there has been limited use of compulsory licenses for cancer drugs. In fact, only 2 countries have issued compulsory licenses for cancer treatment to reduce the cost of medication. India’s first (and so far only) compulsory license was for sorafenib, a drug to treat kidney cancer,14 and Thailand granted compulsory licenses over 3 cancer medications: erlotinib (for small cell lung cancer), letrozole (for early breast cancer) and docetaxel (for breast cancer).15 Both countries cited the high cost of the patented drugs as the reason for issuing compulsory licenses to improve access to these medicines in their patient population.16

Despite their limited use, compulsory licenses in these countries were hugely contentious.17 Specifically, both countries were unilaterally targeted by the United States through the Special 301 process, which identifies nations whose domestic IP laws and policies are perceived as creating market access barriers to US business interests. As a result, India and Thailand have featured in the Priority Watch Lists compiled annually by the Office of the US Trade Representative under Section 301 of the Trade Act of 1974 for having instituted legitimate health safeguards.18 Unilateral US actions have been on shaky legal grounds because the trade regime only provides for multilateral dispute settlement. That the United States, as a rule, unilaterally forces trade concessions from countries using negotiated flexibilities to alleviate a public health crisis has resulted in interventions by the WHO and the United Nations19 in favor of countries that lack the same bargaining power as the United States. Nevertheless, US actions have made countries hesitant to use compulsory licenses to increase access by lowering the cost of cancer medications.20

#### Cancer medications are uniquely expensive. That either drains developing countries public health resources OR forces them to forego treatment altogether.

Brittany L. Bychkovsky 16. Oncologist, teaches at Harvard Medical School. 2016. “Compulsory Licenses for Cancer Drugs: Does Circumventing Patent Rights Improve Access to Oncology Medications?” https://ascopubs.org/doi/full/10.1200/jgo.2016.005363.

There is also the argument that the price of patented medications is not the main barrier to medication access in LMICs and, in fact, that lack of manufacturing capacity or poor health care systems are larger contributors that impact access.[10](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363),[15](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) Counter arguments to this point are simple: if LMICs save money on medication expense, then these savings can be invested in improvement of their own drug manufacturing capacity and health systems. In Thailand, a study found that if relevant HIV/AIDs drugs were not patented, an additional 10,000 prescriptions could be made, which would increase access by 50%.[10](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363)

The high costs of cancer drugs threaten access to cancer treatment even in high-income countries. As a result of its extremely high cost, trastuzumab emtanzine (T-DM1), a drug used to treat metastatic HER2-positive breast cancer, has not been made available to patients treated in the national health system in the United Kingdom, according to a recent recommendation by the National Institute for Health and Care Excellence. The National Institute for Health and Care Excellence estimates that only 1,500 women in the United Kingdom would benefit from treatment with T-DM1 every year and that a year of treatment costs £102,405, roughly 3.9 times the 2014 per capita income of £26,350 in the United Kingdom.[43](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363),[44](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) Compared with lapatinib plus capecitabine therapy in this setting, T-DM1 costs £166,400 per quality-adjusted life year (QALY) gained,[45](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) which is significantly higher than the cost-effectiveness threshold in the United Kingdom of £30,000/QALY gained.[46](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) In contrast to lapatinib and capecitabine, T-DM1 therapy has a more favorable adverse effect profile and is generally well tolerated, an important consideration in patients with advanced cancer where preserving quality of life is a major goal; this fact is not accounted for in the cost and QALY calculation.

Out of concern of the access barrier to T-DM1 therapy, the Coalition for Affordable T-DM1, a civil organization, sent a formal letter to United Kingdom secretary of state for health to ask that the government use provisions in United Kingdom patent laws to authorize the manufacture or importation of generic versions of T-DM1 without the permission of Roche.[43](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363),[44](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) This case simply exemplifies the exorbitantly high price of cancer medications and the urgent need to find solutions to this problem, especially in resource-conscious or resource-constrained settings.

#### Numerous case studies evince solvency.

Brittany L. Bychkovsky 16. Oncologist, teaches at Harvard Medical School. 2016. “Compulsory Licenses for Cancer Drugs: Does Circumventing Patent Rights Improve Access to Oncology Medications?” https://ascopubs.org/doi/full/10.1200/jgo.2016.005363.

To date, compulsory licenses have not been widely used in LMICs to increase access to essential medicines for patients with cancer ([Table 1](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363)); however, there are two important examples in which compulsory licenses were used for cancer drugs in Thailand and India.

**[TABLE OMITTED]**

In 2008, the Thai government issued compulsory licenses for erlotinib, letrozole, and docetaxel, and was one of the first countries to grant a compulsory license for a noncommunicable disease.[19](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) Introduction of a generic version of letrozole was estimated to save US$88 to US$102 million per year, docetaxel US$46 to US$53 million per year, and erlotinib US$6 to US$8 million per year.[32](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) A compulsory license for imatinib was initially pursued, but then canceled after negotiations with Novartis proceeded—Novartis has now made imatinib available to all patients who receive care in the public health system as part of their funded International Patient Assistance Program.[6](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363),[33](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) The Thai government decision to issue compulsory licenses for oncology drugs coincided with other cost-containment measures and efforts to expand public health coverage.

After compulsory licenses were pursued for erlotinib, letrozole, and doxcetaxel in Thailand, there were clear benefits in terms of reducing drug costs and improving access to treatments for patients with cancer.[6](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) For letrozole, the compulsory license reduced the cost per pill from US$7.35 to US$0.19 to US$0.22 per pill, which represents a 30-fold difference in price.[6](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) Within 5 years of offering letrozole, docetaxel, imatinib, and erlotinib in the public health system, an additional 8,916 patients received letrozole, 10,813 were treated with docetaxel, 1,846 with imatinib, and 256 with erlotinib.[6](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363)

The first compulsory license for an oncology drug in India was issued in 2012 for sorafenib. At that time, Bayer’s sorafenib was used primarily for advanced liver and renal cancer and improved outcomes only by a few months; however, a year of treatment cost US$96,000.[6](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) By pursuing a compulsory license, generic manufacturing of sorafenib was started in India, which reduced the cost of treatment to US$2,124 for 1 year—US$177 per month from US$8,000 per month.[6](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363)

Since 2013, the government of India has pursued compulsory licenses for trastuzumab, dasatinib, and ixabepilone. As a result, Roche abandoned its patent claims for trastuzumab, and the Indian high court approved a local drug company, Biocon, to produce a biosimilar[34](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363); however, Roche subsequently sued the Indian drug regulatory agency for approving Biocon-Mylan’s trastuzumab as a biosimilar without carrying out clinical trials.[35](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) Currently, Biocon has entered phase III trials with trastuzumab to demonstrate that their biosimilar version of trastuzumab has efficacy against human epidermal growth factor receptor 2 (HER2) –positive breast cancer.[36](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) In our opinion, trastuzumab is a good choice for a compulsory license as it has excellent efficacy against HER2-positive breast cancer in both the metastatic and early disease settings. However, as the case from India shows, the process for obtaining a compulsory license and identifying a manufacturer to support the drug’s development can take years and delay access to important medications.

For dasatinib, the Indian patent office rejected the request for a compulsory license, saying that the government failed to explore the proper channels to obtain a voluntary license from the patent holder.[37](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363),[38](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) A request for a subsequent compulsory license was pursued in 2015 and the Delhi High Court rejected the request and upheld the patent held by Bristol-Myers Squibb.[37](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363),[38](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) The compulsory license request for ixabepilone was withdrawn as a result of toxicity concerns related to the drug.[39](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363)

From an economic perspective, substitution of patented drugs with generic versions is cost saving, and from a public health standpoint, not only permitting but also encouraging generic drug production and use increases access to essential cancer medications in LMICs. For example, in India, if generic versions of paclitaxel, docetaxel, gemcitabine, oxaliplatin, and irinotecan—five commonly used chemotherapeutic agents—were introduced, the potential annual savings for the health care system is nearly US$843 million (or €670 million).[40](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363) In fact, generic versions of these drugs are already available and cost 8.9% to 36% less than the equivalent branded drug, and there is only a need to permit their use in the Indian market.[40](https://ascopubs.org/doi/full/10.1200/jgo.2016.005363)

#### Unchecked, cancer decimates achievement of sustainable development goals across the board---even if not now, cancer in developing states will accelerate. Cost-effective treatment is key---otherwise, cancer drains disease response resources across the board.

UICC 17. The Union for International Cancer Control. 2017. International NGO in every country founded in the 1930w. “Cancer and SDGs.” https://www.uicc.org/what-we-do/advocacy/global-commitment/cancer-and-sdgs.

WHO estimates that 70% of cancer deaths occur in low- and middle- income countries (LMICs) and, by 2030, LMICs are expected to bear the brunt of the expected 24.1 million new cancer cases per year. Given the social and economic burden of cancer in many LMICs, reducing the global cancer and NCD burden is a prerequisite for addressing social and economic inequity, stimulating economic growth and accelerating sustainable development. In collaboration with the NCD Alliance, UICC engaged in a six-year advocacy campaign to position NCDs in the SDGs. This yielded a number of important wins within SDG 3: Target 3.4 reduce by one third premature mortality from NCDs through prevention and treatment, and promote mental health and wellbeing Target 3.8 achieve universal health coverage (UHC), including financial risk protection, access to quality essential health care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all 3.A Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate 3.B Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines... 3.C Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States Implementing cost-effective cancer interventions across the care continuum can strengthen the health system and increase a country’s capacity to respond to a range of health conditions across population groups. It is thus critical to achieving not only SDG health targets, but also the SDGs more broadly. We know that a healthy population relies on sustainable development but, equally, sustainable development relies on a healthy population.

#### That’s key to head off a laundry list of interacting catastrophic risks including pandemics and environmental collapse, the combination of which risks extinction AND amplifies every other threat.

Tom Cernev & Richard Fenner 20, Australian National University; Centre for Sustainable Development, Cambridge University Engineering Department, "The importance of achieving foundational Sustainable Development Goals in reducing global risk," Futures, Vol. 115, January 2020, Elsevier.

4.1. Cascading failures

Fig. 3 demonstrates that cascade failures can be transmitted through the complex inter-relationships that link the Sustainable Development Goals. Randers, Rockstrom, Stoknes, Goluke, Collste, Cornell, Donges et al. (2018) have suggested that where meeting some SDGs impact negatively on others, this may lead to “crisis and conflict accelerators” and “threat multipliers” resulting in conflicts, instability and migrations. Ecosystem stresses are likely to disproportionately affect the security and social cohesion of fragile and poor communities, amplifying latent tensions which lead to political instabilities that spread far beyond their regions. The resulting “bad fate of the poor will end up affecting the whole global system"(Mastrojeni, 2018). Such possibilities are likely to go beyond incremental damage and lead to runaway collapse.

The World Economic Forums’ Global Risks Report for 2018 shows the top five global risks in terms of likelihood and impact have changed from being economic and social in 2008 to environmental and technological in 2018, and are closely aligned with many SDGs (World Economic Forum, 2018). The report notes “that we are much less competent when it comes to dealing with complex risks in systems characterised by feedback loops, tipping points and opaque cause-and-effect relationships that can make intervention problematic”. The most likely risks expected to have the greatest impact currently include extreme weather events natural disasters, cyber attacks, data fraud or theft, failure of climate change mitigation and water crises.

These are represented in Fig. 3 by the following exogenous variables. “Climate change” drives the need for Climate Action (SDG 13), “Cyber threat” may adversely impact technology implementation and advancement which will disrupt Sustainable Cities and Communities (SDG 11); Decent Work and Economic Growth (SDG 8) and the rate of introduction of Affordable and Clean Energy (SDG 7), with reductions in these goals having direct consequences in also reducing progress in the other goals which they are closely linked to. “Data Fraud or Threat” has the capacity to inhibit innovation and Industrial Performance (SDG 9), reducing competitiveness (and having the potential to erode societal confidence in governance processes). “Water Crises” (linked with climate change) have a direct impact on Human Health and Well Being (SDG 3) as well as reducing access to Clean Water and Sanitation (SDG 6) and reducing agricultural production which increases Hunger (SDG 2). The causal loop diagram also highlights “Conflict” as a variable (driven by multiple environmental-socio-economic factors) which together with regions most impacted by climate degradation will lead to an increase in migrant refugees enhancing the spread of disease and global pandemic risk, thus impacting directly on Human Health and Well Being (SDG 3)

4.2. Existential and catastrophic risk

The level and consequences of these risks may be severe. Existential Risks (ER) have a wide scope, with extreme danger, and are “a risk that threatens the premature extinction of humanity or the permanent and drastic destruction of its potential for desirable future development” (Farquhar et al., 2017,) essentially being an event or scenario that is “transgenerational in scope and terminal in intensity” (Baum & Handoh, 2014). With a smaller scope, and lower level of severity, global catastrophic risk is defined as a scenario or event that results in at least 10 million fatalities, or $10 trillion in damages (Bostrom & Ćirković, 2008). Global Catastrophic Risk (GCR) events are those which are global, but they are durable in that humanity is able to recover from them (Bostrom & Ćirković, 2008; Cotton-Barratt, Farquhar, Halstead, Schubert, & Snyder-Beattie, 2016) but which still have a long-term impact (Turchin & Denkenberger, 2018b).

Achieving the Sustainable Development Goals can be considered to be a means of reducing the long-term global catastrophic and existential risks for humanity. Conversely if the targets represented across the SDGs remain unachieved there is the potential for these forms of risk to develop. This association combined with the likely emergence of new challenges over the next decades (Cook, Inayatullah, Burgman, Sutherland, & Wintle, 2014) means that it is of great value to identify points within the systems representations of the Sustainable Development Goals that could both lead to global catastrophic risk and existential risk, and conversely that could act as prevention, or leverage points in order to avoid such outcomes. This identification in turn enables sensible policy responses to be constructed (Sutherland & Woodroof, 2009).

Whilst existential threats are unlikely, there is extensive peril in global catastrophic risks. Despite being lesser in severity than existential risks, they increase the likelihood of human extinction (Turchin & Denkenberger, 2018a) through chain reactions (Turchin & Denkenberger, 2018a), and inhibiting humanity’s response to other risks (Farquhar et al., 2017). It is necessary to consider risks that may seem small, as when acting together, they can have extensive consequences (Tonn, 2009). Furthermore, the high adaptability potential of humans, and society, means that for humanity to become extinct, it is most likely that there would be a series of events that culminate in extinction as opposed to one large scale event (Tonn & MacGregor, 2009; Tonn, 2009).

Whilst the prospect of existential risk, or global catastrophic risk can seem distant, the Stern Review on the Economics of Climate Change estimated the risk of extinction for humanity as 0.1 % annually, which accumulates to provide the risk of extinction over the next century as 9.5 % (Cotton-Barratt et al., 2016). With respect to identifying these risks, it is known that in particular, “positive feedback loops… represent the gravest existential risks” (Kareiva & Carranza, 2018), with pollution also having the potential to pose an existential risk.

With respect to reinforcing feedback loops, there is particular concern about the effects of time delay, and the level of uncertainty when feedback loops interact (Kareiva & Carranza, 2018). It is difficult to identify the exact thresholds that are associated with tipping points (Moore, 2018), which leads to global catastrophic risk or existential risk, and thus it is necessary to understand the events that can lead to existential risks (Kareiva & Carranza, 2018).

Table 1 identifies possible global catastrophic risks and existential risks as reported in the literature and from Fig. 3 these are aligned to the Sustainable Development Goals they impact on the most.

4.3. Linking risks with progress in the SDGs

Generally it is the Outcome/Foundational and Human input SDGs that are most directly related. For example as the movement of refugees increases pandemic risk, poverty levels in low and middle income countries increase reducing the health of the population, and so restricting access to education which further enhances poverty and birth rates rise as family sizes increases generating unsustainable population growth which furthers the migration of refugees (Fig. 5). Fig. 3 shows that leverage points to reduce refugees lies in SDG 16 (Peace Justice and Strong Institutions), reducing malnutrition through alleviating SDG 2 (Zero Hunger) and taking SDG 13 (Climate Action) to avoid the mass movement of people to avoid the impacts of global warming.

Global warming itself will drive disruptive changes in both terrestial and aquatic ecosystems affecting SDG 15 (Life on Land) and SDG 14 (Life Below Water) adding to their vulnerability to increases in pollution driven by a growing economy. Loop B (in Fig. 4)shows the constraints associated with SDG 13 (Climate Action) may slow the economic investment in industry and infrastructure reducing the pollution generated, encouraging adoption of SDG 7 (Affordable and Clean Energy) whilst stimulating carbon reduction and measures such as afforestation, which will also improve the foundational environmental goals.

Depletion of resources and biodiversity are strongly linked to SDG 12 (Responsible Consumption and Production) through measures such as halving global waste, reducing waste generation through recycling reuse and reduction schemes, and striving for more efficient industrial processes. The more resources that are used, the less responsible is Consumption and Production which may thus reduce biodiversity (Fig. 3) and increase the amounts of wastes accumulating in the environment.

The final driver of Global Catastrophic Risk is an agricultural shortfall which will increase global Hunger (SDG 2) and widen the Inequality (SDG 10) between rich and poor nations and individuals. Quality Education (SDG 4) is important as a key leverage point to stimulate the generation and adoption of new technologies to improve energy (SDG 7) and water supplies (6) which can enhance agricultural production. Such linkages are convincingly examined and demonstrated in the recent film “The Boy Who Harnessed the Wind” (2019), based on a factual story of water shortages in Malawi in the mid 2000s.

These examples may appear self evident, but it is the connections between the goals and how they adjust together that is important to consider so the consequence of policy actions in one area can be fully understood. Because of the underlying system structures global threats can quickly transmit through the system. Water Crises will limit the water available for agriculture and basic needs which in turn will stimulate a decline in Gender Equality (SDG 5). Technology disruption from cyber attacks will restrict the ability to operate Sustainable Cities and Communities (SDG 11) and potentially expose populations to extreme events by disrupting transport, health services, and the ability to pay for adaptation and mitigation of climate related threats from a weakened economy. Conflict (in all forms) will increase refugees and climate change provides the backdrop against which all these interactions will play out.

Whilst it is possible that general catastrophic risk or existential risk scenarios may eventuate from the non-achievement of the Sustainable Development Goals, there are certain aspects within the causal loop diagram which if prioritised will reduce this risk. For example, to reduce the risk of pandemic, ensuring that the number of Refugees is minimised, and is a leverage point. Similarly, prioritising SDG 3 (Good Health and Well-being) is essential and is enabled by many of the other goals. However, a feature missing from the SDGs is a recognition of the precautionary principle, with an implicit assumption that technological innovation alone may create improvements in many of the goals.

#### Weak states are existential. Err AFF to account for non-linearity and unpredictable cascades.

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Great powers, with all their resources, power and influence, have inherent weaknesses. These weaknesses are all part of today’s international system as defined by complex interdependence, but they also emanate from weak states. Because weak states are so exposed to shock, vulnerabilities have time to ripen and become part of the international structure, thereby having what I call systemic reach. While Structural Realism posits that the system is constructed by states’ distribution of capabilities, I add that other facets of international politics—vulnerabilities—also create the system and the way states interact with each other. The systemic reach of these threats forces states to act to bolster their chances of survival. I missed this point in Weak States in International Relations Theory. This study then aims to finish what my dissertation started: to theorize how systemic vulnerabilities shape the international system and hence state behavior. The core of this work posits that positive, long-term, sustainable economic development for all states as [is] the only way to correct vulnerabilities. Creating a pragmatic, stable and sound economic policy for all states who are voluntarily open to the system (barring rogue states and peoples who prefer traditional living), is at the backbone of neutralizing vulnerability. An economically developed nation is more prepared to deal with systemic shock than others because it has the resources to do so. Developed countries are more prepared than others to deal with outbreaks of disease, financial crises, sudden environmental disaster, terrorism and drug trafficking and so on than weaker states because they have the resources to do so. Weaker, more underdeveloped states depend on great powers to bail them out during times of trouble; they know great powers must do so as a part of their hegemonic responsibility. Using theory and case studies, this work theorizes the structure of international politics in our day. Taking a holistic look at the mechanisms that guide state behavior, I demonstrate the simple fact that as a global community, we are all in this together. While states tend to pursue interests selfishly, the fact remains that one state’s trouble can spread throughout the globe. States only exist to give people the chance to practice self-determination and to survive against other states. These are all normative statements and do not reflect reality. This book is an attempt to describe reality divorced from traditional understandings of the state, taking into account changes in our world. The realists that stubbornly defend their theories (Kassab and Wu 2014) must take these matters seriously.

#### Prefer a model of risk calculus that prioritizes non-linear existential risks over one-shot linear scenarios.

Liu et al. 18. Hin-Yan Liu, Associate Professor, Centre for International Law, Conflict and Crisis, Faculty of Law, University of Copenhagen; Kristian Cedervall Lauta, Associate Professor, Centre for International Law, Conflict and Crisis, Faculty of Law, University of Copenhagen; Matthijs Michiel Maas, PhD Fellow, Centre for International Law, Conflict and Crisis, Faculty of Law, University of Copenhagen. 09/2018. “Governing Boring Apocalypses: A New Typology of Existential Vulnerabilities and Exposures for Existential Risk Research.” Futures, vol. 102, pp. 6–19.

Are Existential Hazards Necessary for Existential Risks? Having set out taxonomies for differentiating between factors which influence existential risks the question remains whether all components are necessary to bring about an ‘adverse outcome’. Our initial claim was that existential hazards could be sufficient existential risks, but that they were not necessary to pose such risks. Returning to the civilization collapse literature cited above, Ferguson provides a critical insight in contesting the traditional view of cyclical history itself. He posits an alternative conceptual framework by asking the question: ‘What if history is not cyclical and slow-moving, but arrhythmic?’ (Ferguson, 2011, p. 299). Continuing, he summarises the perspective we adopt succinctly: Civilisations… are highly complex systems, made up of a very large number of interacting components that are asymmetrically organised, so that their construction more closely resembles a Namibian termite mound than an Egyptian pyramid. They operate somewhere between order and disorder – on ‘the edge of chaos’, in the phrase of computer scientist Christopher Langton. Such systems can appear to operate quite stably for some time, apparently in equilibrium, in reality constantly adapting. But there comes a moment when they “go critical”. A slight perturbation can set off a “phase transition” from a benign equilibrium to a crisis – a single grain of sand causes an apparently stable sandcastle to fall in on itself. (Ferguson, 2011, pp. 299–300). Wright echoes this sentiment: ‘Civilisations often fall quite suddenly – the House of Cards effect – because as they reach full demand on their ecologies, they become highly vulnerable to natural fluctuations’ (Wright, 2006, p. 130). When combined with the observation that hitherto isolated civilizational experiments have now been merged (Harari, 2015), this raises the spectre that existential risks can coalesce from factors that historically brought about only limited civilizational collapses. Thus, the question we need to pose in this regard is whether vulnerabilities themselves contain the seeds of existential risks? In this context, we should note that vulnerabilities have often been considered mostly as aggravating factors. As aggravators then, vulnerabilities are subsidiary considerations restricted to influencing borderline events: where a potential existential hazard impacts humanity, its susceptibility or resilience could determine whether or not that hazard was transmuted into an existential outcome. In line with vulnerabilities being developed as a separate sphere where existential risks are at play, this section explores the possibility of removing the existential character of the hazard and thus plausibly reducing the calculus to: Existential Risk = Hazard \* Existential Vulnerability \* Exposure [and/or] Existential Risk = Hazard \* Vulnerability \* Existential Exposure An initial issue is that a catalyst of some sort is required to precipitate the existential risk, because even a system with well-exposed inherent susceptibilities will need something to set it motion. Removing the existential hazard component allows us to explore the possibility that relatively minor occurrences can trigger cascades that emerge as existential risks. But a vulnerability cannot by definition transmute into the existential risk itself absent external input: for this reason we diminish the stature of ‘hazard’ in the equation to represent our proposition that exogenous shocks need not be the spectacular existential hazards recognised by the study of existential risks. Instead, the external hazards in our revised equation can include insignificant events which go unnoticed (and quite probably involve a large number of minor occurrences). Contributions and Limitations of Law and Policy Tools for Existential Risks While our deconstruction of existential risks lead to fairly broad claims, it also provides a few concrete questions and insights. First and foremost, if existential risks can indeed be triggered by nonexistential hazards, we need to broaden the scope of investigation in order to draw a more accurate roadmap of the existential risks field, one which can deal with questions of vulnerability and exposure explicitly. Second, the type of perceived challenge channels the range of appropriate responses which can be developed. While existential hazards may appropriately be met by narrower forms of technical solutions and technologically-oriented mitigation strategies, our broader perspective of existential risks open up other toolboxes to confront existential risks. In particular, social vulnerability and human-driven (anthropogenic) exposure require improved governance and coordination for adaptation strategies. Thus, when we reconstruct existential hazards through the optics of the social systems’ inability to withstand them they, per definition, become social phenomena. As noted, many existential risk scholars have recently recognized the importance of reaching out to, and incorporating, law and governance approaches, even where the origin of the existential hazard itself is technological. The critical role of such law and governance approaches should be even more selfevident where the problems in question—the origins of existential vulnerability and exposure—are themselves social, not technological. This opens up a field for law and governance scholars to work more productively and on an equal footing with technical experts and philosophers. Moreover, this allows for a different set of research questions to be posed as to how we might reduce the vulnerabilities underlying the existential risks against humanity, and our collective exposure to hazards leading to existential outcomes. In doing so, our taxonomy has the potential to elevate relevant aspects of otherwise mundane considerations within politics, economics and society to the plane of existential risks. In garnering this attention, we hope that law and policy tools might be more productively incorporated and deployed as a means to building resilience and robustness. Here, central legal institutions as rights, responsibility and societal relations might in fact contribute substantially to reducing both our vulnerability towards, and exposure to, existential risks. The obvious limitations of this approach reside in the observation that many contemporary existential hazards, vulnerabilities and exposures are anthropogenic. This raises the spectre of either ‘iatrogenesis’ (‘[complications] caused by the healer’), where our attempts at treating a problem accidentally give rise to new, potentially worse ailments. Thus, in our attempt to curtail existential vulnerabilities and exposures, we may inadvertently generate new or different existential risks. Yet, the framing remains critical: the vantage points created in our proposed taxonomy encourages alternative ways of thinking about existential risks and provide different accommodation strategies. Finally, the perspective provided by existential vulnerabilities might also foster solutions that will be of more general benefit to humanity as tangential effects of efforts taken to reducing our collective vulnerability and exposure to existential risks. While this appears to be of a lower order of concern at first flush, our taxonomy appears to bind existential risks together with phenomena occurring at different levels. In this sense, existential vulnerabilities and exposures may possess fractal characteristics (Gleick, 1997; Johnson, 2002), reflecting the complexity of their constitution. Support for this claim might reside in the scalability of hazards and vulnerabilities in particular: if pedestrian threats can cascade into existential outcomes, for example, then mundane measures might feedback to reinforce humanity against existential risks. Pushing this to its limits, it is possible the seemingly oblique effects of improved governance undertaken to shore up existential vulnerabilities actually end up as one of the very sources of humanity’s resilience and robustness against existential outcomes. Concluding Thoughts The lessons that we can draw from deconstructing existential risks into hazards, vulnerabilities and exposures can be divided into internal and external lessons for the field of existential risk research. In terms of the lessons for existential risk research, our taxonomy suggests that we may presently reside in a situation of pervasive risk. In identifying the catalogue of existential hazards looming over humanity, and focussing attention to confronting these challenges, the perception is that the outcome of these efforts is a lowering of the overall probability of an actualised existential risk. If our efforts are not actually achieving this, however (because they do not address vulnerabilities or exposures, only direct hazards), we run the risk of achieving safety that is merely ‘symbolic’: we perceive that we are ‘all clear’—that we have successfully steered humanity past ‘existential outcomes’—when we are in fact all the more fragile. Defeating a global pandemic, or securing mankind from nuclear war, would be historic achievements; but they would be hollow ones if we were to succumb to social strife or ecosystem collapse decades later. By proposing alternative paths that lead to existential outcomes, our taxonomy can recalibrate the calculus and reduce the prospect of an existential outcome.

## Fwk

#### The standard is maximizing expected wellbeing.

**1). Actor specificity:**

**A] Governments must aggregate since every policy benefits some and harms others, which also means side constraints freeze action.**

**B] States lack wills or intentions since policies are collective actions. Actor-specificity comes first since different agents have different ethical standings. Link turns calc indites because the alt would be *no* action.**

**3] No act-omission distinction—governments are responsible for everything in the public sphere so inaction is implicit authorization of action: they have to yes/no bills, which means everything collapse to aggregation.**

## UV

#### 1AR theory – a) AFF gets it because otherwise the neg can engage in infinite abuse, making debate impossible, b) reject the debater – the 1AR is too short for theory and substance so ballot implications are key to check abuse, c) no RVIs – they can stick me with 6min of answers to a short arg and make the 2AR impossible, d) competing interps – 1AR interps aren’t bidirectional and the neg should have to defend their norm since they have more time, e) no 2NR theory – 2-to-1 time tradeoff makes it devastating for the 2AR, f) comes first – it’s a bigger percentage of the 1AR than 1NC which means there’s more abuse if I’m devoting a larger fraction of time and only the 2N has time to win multiple layers, g) voters – fairness because debate’s a game that needs rules to evaluate it and education since it gives us portable skills for life like research and thinking.