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CLIMATE CHANGE AND TRIPS: RETHINKING COMPULSORY LICENSING FOR GREEN TECHNOLOGY

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ABSTRACT

“Since the adoption of the ‘Doha Declaration,’ treatment of public health as a justification for overriding patent rights under Article 31 of the TRIPS Agreement has set the standard approach for compulsory licensing scholarship, while considerations of whether climate technology is similarly flexible have been confined to occasional policy briefs and dissertations. Although some recent work analyzes the ICJ’s July 2023 Advisory Opinion, which reinforces States’ existing legal obligations under treaty and customary international law to prevent serious harm to the climate system and other parts of the environment, none of the pieces cited here combines that analysis with the sort of compulsory-licensing trigger developed below and linked to specific, enforceable Article 66.2 benchmarks. Does that represent a hole that needs filling? This paper tries to make the case that it does. Specifically, the ICJ’s Advisory Opinion of 23 July 2023 on the Obligations of States in Respect of Climate Change strengthens the legal argument that certain climate-related circumstances should be analogized to the health emergencies that supported compulsory licensing under the Doha Declaration, while not itself creating new obligations under TRIPS to treat climate change as an emergency. Given India’s statements to the UNFCCC that strong intellectual property protection requirements limit access to clean energy technology, it seems possible that access to patented technologies for carbon capture and storage and other clean energy purposes is being limited by high license fees and other obstacles. While the Agreement requires Technology transfer to LDCs through Article 66.2, the requirement has been implemented through non-binding reporting and review procedures, leading to concerns about lack of accountability and tangible results.” The article considers three potential options: amending Article 66.2 to include measurable and enforceable benchmarks as opposed to self-reporting; moving towards a narrow, climate-specific compulsory licensing trigger along the lines of Doha; and improving technology pools such as WIPO GREEN by learning from failures of previous voluntary initiatives such as the Eco-Patent Commons. The paper concludes with a recommendation for a middle ground hybrid

legal framework that utilises both a narrowly-tailored compulsory licensing mechanism and mandated technology-transfer benchmarks on the grounds that this would have a greater chance of success at ensuring fair green technology dissemination than either compulsory licensing or voluntary pooling by itself.

Keywords: TRIPS Agreement, compulsory licensing, Article 66.2, climate technology transfer, Doha Declaration, patent pools, ICJ Advisory Opinion 2025

The TRIPS Agreement does not and should not prevent Members from taking measures to protect public health.

— *WTO, Doha Declaration on the TRIPS Agreement and Public Health (2001)*, ¶ 4¹.

I. INTRODUCTION

Climate change is a planetary crisis. The tools to combat climate change – carbon capture technology, green hydrogen, clean energy storage solutions – could be limited by patents, restrictive licensing agreements, financing requirements, lack of infrastructure, and myriad other obstacles. How can the world deploy technology solutions at pace with the worsening climate crisis when access to those technologies is limited by IP rights? This paper explores one side of that question by asking: if intellectual property rules can bend during a global health crisis to save lives, why can't they bend during a planetary crisis to save the planet?

Under the TRIPS Agreement, WTO Members are granted a flexibility known as “compulsory licensing” under Article 31 that permits a government to authorise the domestic use of a patented invention without the patent-holder's consent.² The usefulness of this tool was catapulted into the public consciousness with the Doha Declaration in 2001, which focussed compulsory licensing's application on public health to secure affordable access to HIV/AIDS medicines in developing countries. Scholarship on compulsory licensing since that time, reviewed below, overwhelmingly clusters around health technologies. Articles on climate technology are rare by comparison, despite a comparably urgent need.

This paper makes two arguments. First, that a recent development in international law unlocks compulsory licensing's untapped potential to improve access to climate technology. On 23 July 2025, the International Court of Justice issued its Advisory Opinion on the Obligations of States in Respect of Climate Change, unanimously adopted by the Court. Delivered only weeks before countries report their climate pledges to the UNFCCC ahead of COP29, the Opinion was only

the fifth unanimous advisory opinion in the Court's history and marked the ICJ's first-ever advisory opinion specifically addressing States' obligations in respect of climate change.³ For present purposes, the Opinion's key relevance is that the Court characterised climate change as an urgent, existential crisis and grounded its findings in IPCC assessment reports as the "best available science."⁴ The Court further recognised 1.5° C as the central temperature goal of the Paris Agreement and held that States' nationally determined contributions, in the aggregate, must be capable of achieving that goal.⁵ Given that characterization, this paper argues that a legally urgent and impactful climate crisis must be understood to have been firmly established as a matter of international law, in a manner that is structurally analogous to the Doha Declaration's treatment of the HIV/AIDS crisis in 2001. This does not, by itself, identify any climate circumstance that would qualify as the TRIPS-defined emergency of Article 31(b). However, if climate change generally is recognised in international law as presenting the sort of general legal exigency that the ICJ identified, then arguably particular climate-related circumstances may suffice to trigger Article 31(b)'s "extreme urgency" flexibility.

The paper's second novel argument draws on India's statements to the UNFCCC, which have long recognised strict patent protection as a barrier to green-technology transfer. India submitted its Fourth Biennial Update Report ("BUIAR4") to the UNFCCC on 30 December 2024,¹⁵ which identified intellectual property rights ("IPRs") regimes as one of several obstacles that "could hinder the transfer of technology" by "limiting access to relevant, affordable and scalable technologies" in developing countries.⁶ India's concerns about intellectual property and climate technology transfer relate back to TRIPS Article 66.2, which requires developed-country Members to "take effective measures to provide incentives to their enterprises and institutions to promote and encourage technology transfer" to least-developed countries ("LDCs").⁷ Developing-country Members have long criticised this provision as "weakly operationalised." An empirical review of every developed-country Member's 2017 Article 66.2 implementation report found widespread cause for concern, as none of the sampled countries could demonstrate with any certainty that their incentive programmes were limited to LDCs as the provision expressly requires.⁸ To date Article 66.2 has not been meaningfully tested through WTO dispute settlement¹⁰ and its broad language and reporting-based structure has stymied enforcement.⁹ With that gap in mind, this paper outlines three possible avenues for strengthening Article 66.2 to fulfil its promise of incentivising technology transfer for climate mitigation and adaptation: (1) reimagining Article 66.2 with mandatory technology transfer benchmarks rather than relying on voluntary self-reporting; (2) creating a narrow climate-specific compulsory licensing trigger along the lines of the Doha approach to medicine access;

and (3) expanding and strengthening voluntary patent-sharing initiatives such as WIPO GREEN. Balancing the pros and cons of each option, this paper tentatively recommends a hybrid approach combining elements of both mandatory technology transfer and a compulsory licensing trigger as the most politically feasible means of achieving meaningful and expeditious green-technology transfer to developing and least-developed countries.

II. TRIPS ARTICLE 31 AND THE DOHA DECLARATION: THE ARCHITECTURE OF HEALTH-BASED COMPULSORY LICENSING

Before assessing whether climate technology might fit within the compulsory-licensing template, however, it is necessary first to set out precisely what that template contains, and where its own limitations lie. Article 31 of TRIPS permits WTO Members to authorise use of an invention protected by a patent without the consent of the right-holder, subject to a set of conditions: such authorisation must be considered on its individual merits (Art. 31(a)); the would-be user must normally first have attempted to negotiate a voluntary licence on reasonable commercial terms (something which need not happen where use is intended for national emergency purposes, other circumstances of extreme urgency or public non-commercial use - Art. 31(b)); such use must be non-exclusive and non-assignable (Art. 31(d)-(e)); the right-holder must receive adequate remuneration (Art. 31(h)); and critically for what follows, any authorised production must be “predominantly for the supply of the domestic market” (Art. 31(f)). Article 31 does not exist in doctrinal vacuum. Article 7 of TRIPS states that Members “should” contribute to technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare and to a balance of rights and obligations.” Article 8 similarly permits Members to adopt measures needed to protect public health and promote the public interest, and to prevent the abuse of IP rights by right-holders, provided such measures are consistent with TRIPS. Taken together, Articles 7 and 8 provide important textual backing for interpreting TRIPS as a regime designed to balance patent exclusivity against technology diffusion and public-interest goals, rather than viewing TRIPS as a tool for absolute patent protection - the premise underlying both this paper’s Article 31(b) analysis and its later Article 66.2 proposal. One final threshold question deserves brief mention before moving to the substantive analysis: if we are indeed looking at compulsory licensing as a solution, why Article 31 rather than Article 30? Article 30 provides that Members may provide limited exceptions to the exclusive rights conferred by a patent “which do not

unreasonably conflict with a normal exploitation of the patent and which do not unreasonably prejudice the legitimate interests of the patent owner, taking into account the legitimate interests of third parties.” Article 30 generally governs limited, structural exceptions to patent rights (research and regulatory-review exemptions being paradigm examples), as opposed to Article 31’s use-authorizing mechanism on the grand scale that would-be climate-tech response would require. With that in mind, Article 31 and its authorization-plus-remuneration framework – providing, that is, for authorized use subject to specified conditions - is the appropriate vehicle for the mechanism this paper proposes. This paper does not engage Article 30 as a potential alternative approach. Far from rewriting these conditions, the Doha Declaration clarified how those conditions applied in the public-health sphere. Para 4 affirmed Members’ rights to protect public health and to determine what grounds will warrant granting compulsory licences. Para 5(c) went further still, declaring that Members are free to decide what is a national emergency or circumstances of extreme urgency and expressly recognised that public-health crises “including but not limited to HIV/AIDS, tuberculosis, malaria and other epidemics can represent a national emergency or other circumstances of extreme urgency.” It is this express and purposive textual hook, rather than Article 31 itself, that carries most of the doctrinal weight in compulsory-licensing scholarship generally, and that this paper later argues can - textually if not yet practically - accommodate climate change. What the Doha process revealed, however, was not a limitation of Article 31 itself but rather a structural limitation of the compulsory licensing regime as defined by Article 31, which TRIPS Article 31bis was created to solve. As noted, the domestic-market limitation of Article 31(f) rendered compulsory licensing effectively unavailable to Members with no or little pharmaceutical manufacturing capacity of their own: such countries could authorise such a licence all they liked, but no other Members’ compulsory licensee could lawfully export it predominantly for their supply. Instead of solving this through Article 31 directly, the WTO General Council issued a waiver decision in August 2003 that created a temporary Article 31 exception to supply such countries; that waiver was made permanent by way of treaty amendment when the Protocol of 6 December 2005 entered into force on 23 January 2017, adding a new Article 31bis to the Agreement together with an Annex and Appendix. The first ever amendment to a WTO multilateral trade agreement since the WTO Agreement itself entered into force in 1995, this “paragraph 6 system,” as it has come to be known, took fourteen years to go from political declaration to legally binding WTO treaty.¹⁰ Even when it was finally operational, the system has only been used once. Canada’s 2007 grant of an export licence to Rwanda for the supply of HIV antiretrovirals remains, thirteen years later, the paradigm case,¹¹ and reports of the

paragraph 6 system in action describe it as cumbersome and bureaucratic, with barriers to use placed disproportionately on those Members without domestic manufacturing capacity. This is critical to the Article 31 proposal made here. It shows that there is an existing analogue within the international system for facilitating cross-border supply of compulsory-licensed medicines where domestic manufacturing capacity is lacking. However, it should also temper the paper's later enthusiasm for a climate-specific trigger: if something as tried-and-tested as the health template - backed by twenty years of political consensus and an NGO/generic industry ecosystem - took fourteen years to implement and is still struggling for use, an innovative climate trigger patterned on it should not be portrayed as an immediate solution.

III. LITERATURE REVIEW

Literature on TRIPS and climate technology exists, but it is spread across multiple separate, only weakly-overlapping threads. Reviewing briefly: Part II's health-CL template stands as required background reading because scholarship engaging both TRIPS and technology transfer treats Article 31 and the Doha Declaration overwhelmingly as a single reference point specific to pharmaceuticals; works where climate technology is discussed tend to treat it as secondary or illustrative rather than analysing it directly. PART II recap Similarly, work that challenges patents as the bottleneck to green-tech transfer empirically does not engage with TRIPS at all, instead arguing that there is scant evidence that IPRs are at all restrictive on technology access for climate mitigation and adaptation because most climate tech falls into established disciplines with a range of substitutes available¹² or that at least this was true historically while acknowledging that rapidly-emerging technology fields like advanced storage and synthetic fuels may buck this trend. This paper encounters that thread head-on by virtue of attempting to claim that patents are not the binding constraint. Two threads explicitly discuss using TRIPS flexibilities for climate technology: Either through political statements at the WTO TRIPS Council itself, where Developing countries including Ecuador first brought up flexibilities for green technology as early as March 2013 when Ecuador listed "facilitating the transfer of technology under Article 66.2 through the effective use of intellectual property"¹³ at promoting green R&D or via advocacy efforts from groups like Third World Network, where intellectual property law scholars like Martin Khor have argued that the need for technology to meet climate mitigation or adaptation objectives satisfies the compulsory licensing criterion of national public interest outright¹⁴. Both of these skip straight to arguing for what this paper is trying to reach as a conclusion, rather than getting into the weeds of what

Article 31 actually permits. A handful of academic works have focused on climate tech and compulsory licensing specifically¹⁵ but have naturally concluded that it is legally defensible while being handicapped by mandatory domestic-market usage, case-by-case consideration, and adequate remuneration rules outlined above in Part II. Conversely, Neel Maitra's excellent paper¹⁶ for the Sabin Center took a CL-skeptical view to chronicling means to limit obligatory licensing under TRIPS, and is useful contrast for the compulsory licensing-plus proposal developed in Part VI: Maitra treats expanded CL as one of several tools that developed countries could use to weaken patents, and suggests an alternate mechanism to mandatory licensing that the paper here should counter rebut directly. Finally, I am aware of one working paper that approaches climate technology and Article 31 from the same angle as this paper: reading climate-related developments severe enough to trigger Article 31's national emergency or extreme urgency clause as potentially legally justifiable¹⁷. While that paper stops far short of arguing that such a trigger would be met today, its core thesis complements this Part V directly. If anything, that essay understates its own case because it recognises that "national emergency" and "extreme urgency" are completely undefined by TRIPS and emphasises the authors' shared scepticism that climate change easily fits either category without a Doha-style interpretive clarification to point to. The paper I am writing argues that the ICJ gave us that characterisation last summer.

As for Article 66.2, the literature doubting the provision's value is likewise fairly direct because its empirical observation is that countries have mostly not done it. The record of Members' implementation shows that the failure to explicitly target LDCs in reported Article 66.2 incentive programmes was raised as a question in the 2017 arbitration briefing documents; the same question about absorptive-capacity filtering was raised by staff at the same law firm years earlier, using the 2011 compilation of Members' third implementation reports. More recent critiques from the WTO Secretariat and the United Nations extend that underlying concern through about halfway through 2023, while the South Centre has published multiple policy briefs documenting implementation efforts and their perceived shortcomings into 2023, much like this paper does for WIPO GREEN in Part IV.3. The 2023 review by Van Weelde et al. is also worthy of direct citation since it largely overlaps with the South Centre's briefs from later that year in subject matter and time period covered¹⁸. The takeaway is that there is a full timeline of the literature critiquing Article 66.2, flowing from 2011 to the present, rather than reliance on a single paper saying that it did not work.

Two clearinghouse programmes loom particularly large over this discussion. The Eco-Patent Commons was begun by a handful of manufacturing firms in 2008, pledging patents that they

would be willing to license royalty-free for green technology uses. It grew to a high point of 248 patents and thirteen member firms before being formally retired in 2016, and has appeared in the policy literature since as an unsuccessful prior example of such pooling.¹⁹ The authors of that case study subsequently conducted follow-up work combining economic analysis with interviews with member firms to argue that the Commons did not effectively increase the uptake of those patents; organisational and incentive-based barriers also deterred many firms from joining later.²⁰

WIPO GREEN started up around the same time under WIPO leadership, with a very different approach specifically designed to overcome those barriers by avoiding the patent-pooling structure in favour of an online portal to facilitate contacts between technology holders and seekers. If one wanted to reopen and update the Commons with the lessons from WIPO GREEN incorporated, that would theoretically form part of what is being examined in Part IV.3. Instead, this paper asks whether WIPO GREEN on its own meets the Commons' criteria for success, which allows a contrast between its reported performance and that of a pooled licensing system that failed for reasons WIPO GREEN was designed to avoid.

IV. THE ICJ ADVISORY OPINION AS A “CLIMATE EMERGENCY” ANCHOR: PROMISE AND STRUCTURAL LIMITS

A. Paragraph 5(3)'s Anchor ¶5(c) What Part II showed was that Paragraph 5(c) of the Doha Declaration derived its force from two sources combined: its institutional pedigree - it was adopted by the WTO Ministerial Conference itself, operating squarely within TRIPS' s own order of interpretation - and its specificity - it named specific, medically bounded conditions HIV / AIDS, tuberculosis, malaria as examples of what might qualify as a national emergency. Anchor text Any purported “climate emergency” paragraph will need to pass muster against both of those features - institutional pedigree and specificity - not just Paragraph 5(c)'s general moral force.

B. What the ICJ Opinion Provides Instead First, some background to defend the anchor this Part pulls from the ICJ Opinion. The Opinion did not fall from the sky. The International Tribunal for the Law of the Sea (hereinafter “ITLOS”) rendered its own Advisory Opinion on Climate Change and International Law on 21 May 2024. At issue for ITLOS were States' obligations under UNCLOS to prevent, reduce, and control marine pollution caused by greenhouse gas emissions, and the ICJ' s 2025 Opinion came on the heels of that opinion by

about fourteen months and has been described as giving the ITLOS Opinion considerable interpretive force.²¹ Domestic courts, and regional international ones as well, have seen a similar trend over the past few years: In *Verein KlimaSeniorinnen Schweiz v. Switzerland*, decided in 2024, the European Court of Human Rights found that Switzerland's inadequate mitigation efforts failed to satisfy Article 8 of the European Convention on Human Rights²² and, in its 2021 decision *Neubauer v. Germany*, Germany's Federal Constitutional Court held that Germany's climate change legislation failed to sufficiently account for the interests of younger and future generations.²³ While these cases, along with the Dutch Supreme Court's earlier *Urgenda Foundation v. Netherlands* decision holding that human-rights commitments the state itself made required it to adopt a minimum emissions-reduction target²⁴, do not themselves articulate any TRIPS compulsory licensing right and are not meant to be read to do so here, they are mentioned to highlight how the ICJ's Opinion in 2025 is part of a larger trend of international courts recognizing that climate change obligations are legally, rather than merely politically, binding - the proposition this Part relies upon before turning to what specifically does and doesn't come from the ICJ Opinion. Partially, and all three gaps should be recognized at the outset instead of being swept under the rug. The ICJ Opinion on *Obligations of States in Respect of Climate Change*. First, an institutional gap. Unlike ¶5(c), which speaks from within the WTO edifice, the ICJ Opinion addresses States under general international law from outside that specific legal order. Any WTO Member, or domestic tribunal assessing that Member's good-faith in making its Article 31(b) emergency determination, would have to import the Opinion's findings about climate change being a legal emergency through the Vienna Convention's²⁵ Article 31(3)(c) unity-of-treaty-clusters principle interpretation in the context of international law applicable to the parties and deriving therefrom which is an enablement clause, not an automatic default. Compared to ¶5(c)'s "force," this is an argument from weakness, not strength; if the analogy to ¶5(c) is to be used at all, it should be used openly with its limitations stated rather than overstated. Second, a gap by omission. The Opinion makes no mention of patents, TRIPS, or compulsory licensing. Paragraphs on the Opinion discussing patents appear nowhere. The Advisory Opinion discusses technology development and transfer at paragraph 266 specifically, after covering financial assistance at paragraphs 263 through 265 and before turning to capacity-building at paragraph 267.²⁶ This paragraph closely mirrors the obligations States already have under Article 10 of the Paris Agreement regarding cooperation on technology development and transfer; it is best understood as the Court giving its authoritative interpretation of that (existing) treaty commitment, not creating new law on the topic ab initio. This Part's analogy between the

Opinion and the availability of a TRIPS-like emergency trigger is thus constructed by extension from the Paris Agreement's requirements, not by any direct invitation from the Court itself, and is laid out at the top of this paragraph. Third, and more importantly, a gap in specificity. How "evolved" should differentiated cooperation obligations be with regard to mitigation or adaptation funding is left unanswered by the Opinion's language on technology transfer, as is how that financial contribution should compare to these obligations - an omission that leaves ITT language, like that of Article 66.2 of TRIPS analyzed in Part V above, as an obligation of best effort. Instead of reading the ICJ Opinion as somehow getting around Article 66.2's failings, the stronger argument is that they are both susceptible to the same critique, which is why the proposed hybrid negotiated in Part VII includes binding numbers as opposed to simply relabeling an emergency. The ICJ Opinion has useful language on CBDR-RC, however. Rather than reading CBDR-RC as a freestanding substantive commitment, the Court found that "the overarching principle of CBDR-RC must be read as directing how the equity dimension should be reflected in the implementation of States' responsibilities" (para. 148²⁷). That equity assessment, in turn, is based on "both their historical contribution to the accumulation of greenhouse gases in the atmosphere and current capabilities taking into account states' respective circumstances." Commentators on the Opinion have noted that 'the majority' s formulation prioritises operative capability over past responsibility [125] - a reading that bolsters calls for rapid mitigation yet does relatively little to anchor technology-transfer or loss-and-damage demands in past blame. This suits the instant analogy, well understood: Doha's compulsory licensing rationale was never a blame argument against pioneer drug firms but a capacity argument regarding who could pay or produce what they required. The ICJ's capacity-focused interpretation of CBDR-RC accords with that rationale better than would a past-blame interpretation, and the climate-trigger drafted in Part VII is consequently rooted in capacity, not culpability.

C. The Harder Problem: Epidemic vs. Diffuse, Cumulative Harm

Here is where we actually have to engage with the analogy, rather than wave hands at a disanalogy. An epidemic is both domestically-confined and easily provable: a Member can point to its own mor-death statistics as the emergency to be addressed, and the compulsory licence serves that same domestic populace. Climate change, by contrast and on the Court's own description is cumulative, and global harm is neither localized to, nor caused predominantly by, the import state. That produces some real doctrinal tension with Article 31(f)'s domestic-market requirement, which we've seen popping up throughout Part II: the

whole paradigm presupposes both the emergency and the solution are domestically-situated. Issuing a compulsory licence for antiretrovirals treats domestic patients; issuing a compulsory licence for carbon-capture knowhow, so long as the production facility licensed is actually built and operated in the licensing Member's own territory, still constitutes domestic "use" of that technology in the sense of Article 31(f) even though the emissions reduction accrues to the entire planet's atmosphere rather than any neatly-bounded domestic populace. The doctrinal tension is thus more narrow than it initially seems: Article 31(f) asks where the authorized production and use takes place, not where the ultimate benefit of the technology is enjoyed, and nothing in that requirement is violated by a Member using mitigation technology within its own borders merely because the climate benefit of doing so will accrue globally. The real problem only arises in the situation where a mitigation technology can't realistically be produced/deployed in the licensing Member's own territory at all - because there is no domestic manufacturing base, the use would necessarily involve either cross-border production or export. The exact fact pattern that gave us the Article 31bis "paragraph 6 system" for pharmaceuticals. Where that situation obtains, Article 31(f) does putatively call into question the coherence of attaching the remedy without use of some export mechanism; outside of that situation, saying that mitigation technology categorically can't be used to serve compulsory licenses flirts with the doctrinal difficulty. The last point breaks down, however, if we treat "green technology" as a monolith. Mitigation technologies (carbon capture, green hydrogen, energy storage, etc.) tend to generate a global/ public-good benefit that is quite removed from the licensee's domestic market. Adaptation technologies (sea wall/flood defences, drought-resistant cultivars, desalination plants) tend to generate a benefit every bit as domestically-contained as a dose of vaccine. The Doha analogy works best of all for adaptation technology; stretching the same triggering clause to mitigation technologies is easiest where the licensee will in fact use that technology at home, more difficult (where Article 31(f) is concerned) and perhaps require either an Article 31bis-style export mechanism or a different theoretical touchstone in JUSTIFICATION (i.e. contribution to a global commons rather than the one Doha actually relied upon) in cases where domestic use is not feasible. We make this an explicit scoping decision in the methodology set out below, rather than an implicit assumption baked into the technology list at the Abstract. It gets worse. An epidemic also has definable acute stages that correspond with Article 31(b)'s "extreme urgency" requirement. Climate change, particularly in the ICJ's own description, cumulative and intergenerational. A compulsory licence is a one-time legal event connected to a particular application; the harm it would be remediating is not episodic, but open-ended. Presumably for that reason the sunset-clause and periodic-review

requirements I propose in Part VII are not optional safety valves, they're the means by which we make an open-ended harm budge compatible with an inherently episodic legal mechanism.

V. INDIA'S UNFCCC SUBMISSIONS AND THE EMPIRICAL RECORD

A. What India Actually Said, and When

Two data points drive this Part. Both are established above²⁸: firstly, India's statement at the COP29 high-level ministerial roundtable in Baku on 18 November 20 ; secondly, its Fourth Biennial Update Report (BUR-4), filed with the UNFCCC on 30 December 20. Taken together, these establish that one State repeated, in two different fora linked to the UNFCCC within six weeks of each other, nearly identical language about intellectual-property barriers to climate-technology transfer. That such repetition occurred at all is doctrinally significant, and significant beyond its face. Recall from Part II that Paragraph 5(c)'s entire structure rests on each Member's ability to define for itself what constitutes an emergency of that sort. A consistent and doubly-articulated formal international submission could fairly be seen as more expressive of that type of Member-driven self-determination than would a lone op-ed or NGO white paper.²⁹

B. Self-Determination Rather Than Economic Proof

Part III's literature review identified a legitimately empirical-skeptic literature about whether patents actually are the constraint on diffusion of green technologies that we assume they are. This paper neither tries to referee that debate here nor ducks the point by ignoring the skeptics or overclaiming that India's BUR-4 somehow settles it. The reason is structural rather than evasive: Article 31(b), read via Paragraph 5(c)'s hermeneutic force, simply does not call for independently verified econometric evidence that the patent in question causes non-access; it grants the invoking Member considerable latitude to conclude that an emergency or circumstance of extreme urgency exists, though the degree of that latitude and the scope of external review are legally disputable. India's action, its repeated, formal assertion at the government level, is supplying the evidence Paragraph 5(c) seems to require a Member's own determination to supply; it is evidence that the triggering condition has been met, not that the economics underlying the trigger condition exist, nor that such a determination is unreviewable. Casting the argument this way avoids a confrontation with the skeptic literature we need not win.

C. The Link Back to Article 66.2

Placed side-by-side with the harder data point developed in Part III (the 2017 Article 66.2 reports revealed significant cause for concern about whether reported programmes were solely benefiting LDCs), the finding that developed in Section IV.C (Article 66.2 BUR-4's language mandating technology transfers has not been satisfied under the existing reporting regime despite years of reporting) is best read as two separate lines of evidence - one from the perspective of a technology-seeking State and one from an audit of technology-providing States' own reporting - pointing to the same conclusion: the reporting system has produced quantity (530+ reports as of September 2020, and 21 TRIPS Council reviews since 2003³⁰) without indicating positive technology-transfer results that would suggest progress towards Article 66.2's goal. The WTO Staff Working Paper on lessons learned from the 2018–20" reporting cycle, for example specifically reviewed 25 reports detailing 754 technology-transfer programmes. Of these, 708 programmes were analyzed in-depth across seven areas of technology.³¹ Both parts together-rather than either datapoint in isolation-are the empirical backbone for the binding-benchmarks proposal offered in Part VII.

D. India's Domestic Compulsory-Licensing Regime

India's contributions to the UNFCCC are not its sole national insight into the creation of a *pare-contraire* regime. India has already created a functional compulsory licensing scheme operational within the constraints of TRIPS, endowing this paper with an actual caseStudy in addition to a purely hypothetical analogy. Under Section 84 of the Patents Act, 19 70, "any interested person" may apply for a compulsory licence after three years have passed from the date of grant on three separate grounds: that the reasonable requirements of the public with respect to the patented invention have not been satisfied (§84(1)(a)); that the invention is not available to the public at a reasonably affordable price (§84(1)(b)); or that the invention has not been worked in India (§84(1)(c)). In Bayer Corp., India's Controller of Patents issued the first compulsory licence under Section 84, allowing Natco to produce Bayer's patented kidney and liver-cancer medicine sorafenib tosylate (sold as Nexavar) based on findings that Bayer failed to satisfy any one of those three §84(1) criteria.³² This decision has since been appealed all the way up to the Indian Supreme Court and affirmed at each stage, providing this paper with an appellate-vetted example of India's compulsory licensing scheme in action rather than merely its textual outline. Separately, Section 92 allows the Central Government to "issue a direction for the grant of compulsory licence for the prevention of any emergency or occurrence of extreme urgency or in the public interest and for non-commercial use," which verbatim

language appears in Article 31(b), and Section 92A allows for compulsory licensing for the purpose of manufacturing and exporting patented pharmaceuticals to countries with “no or limited manufacturing capacity to produce the pharmaceutical product” domestically. India’s implementation of the system created under Article 31bis Paragraph 6 in Part II above. Taken together, these two Sections provide the statutory skeleton of a functional compulsory licensing scheme that mirrors Article 31 entirely with respect to the emergency/ extreme urgency trigger. Section 92A of the Indian Patents Act is narrowly confined to pharmaceuticals by its own terms, however, and thus serves more to demonstrate the mechanism by which India might design such an export-oriented compulsory licence at home than offer a ready mechanism for exporting green technology subject to a compulsory licence. Creating a corresponding regime for green-technology exports would therefore necessitate changes to Section 92A itself alongside whatever WTO-wide amendment is agreed upon, not simply an extension of Section 92A’s existing terms to a new category of covered subject matter. *Novartis AG v. Union of India* concerns patentability under §3(d) of the Patents Act, not compulsory licensing under §84.³³ It is of more limited applicability here and should not be interpreted as granting fodder to either side of the compulsory licensing debate. Its importance is restricted to demonstrating that Indian Supreme Court is amenable to public-interest considerations in applying the Patent Act’s substantive provisions, thereby underscoring this paper’s argument that TRIPS compliance and public-interest-focused statutory construction are not mutually exclusive in India.

VI. EVALUATING THE THREE RESPONSES

A. Option 1 - Binding Article 66.2 Benchmarks

Legally, the simplest option may be to agree to some form of binding output targets for LMDC exports to LDCs. The beauty of this option from a doctrinal standpoint is the cleanest: it requires no override of any patent right at all, and should face less resistance from patent-holder industries than either compulsory licensing or an treaty waiver would. "Binding," as used here, would mean taking the voluntary, self-reported, unaudited filings that are the current state of play and turning them into measurable output targets - say, some minimum number of LDC-directed licensing agreements - that are reviewable by the TRIPS Council with actual consequences for non-compliance rather than the current practice of simply filing.

The obstacle here is political rather than legal: it is the same developed-country Members whose 2017 special survey filings did not already target LDCs exclusively who would need to

agree to alter treaty rights and bind themselves to enforcementable benchmarks. But there is nothing inherent in the mechanism itself that provides reason to expect such agreement will be forthcoming any more now than at any other point in the past two decades unless something changes to alter those Member's incentives. That altering of incentives is exactly what the hybrid mechanism can do.

B. Option 2 - A Narrow Climate-Specific Compulsory-Licensing Trigger

Here, moreover, the most relevant precedent is not 2001 Doha but the 2022 WTO TRIPS waiver³⁴ for COVID-19 vaccines. And it should be read as a cautionary tale, not a reason for confidence. The 17 June 2022 Ministerial Decision installed only a partial waiver of TRIPS flexibilities. The waiver agreed was not the broad patent waiver originally proposed by South Africa and India in October 2020. It was a waiver of the Article 31(f) limitation on authorized use to predominantly serve the domestic market, for COVID-19 vaccines and eligible Members. Negotiating even that highly diluted outcome took nearly two years, required informal quad negotiations among the EU, India, South Africa, and the United States to reach a deadlock-breaking solution, and yielded a product critics were quick to label a diplomatic/artificial patent loophole of limited practical value.

Members agreed to revisit the issue within 6 months to decide whether to extend the waiver to diagnostics and therapeutics; they have not done so. The original decision deadline has been extended multiple times with no sign of resolution. And members from developing countries have continued to protest that decision does not go far enough. It says nothing about transfer of trade secrets or technical know-how, and its footnote 1 encourages countries that already have manufacturing capacity to voluntarily commit to not using the waiver at all-effectively excluding the Members most likely to be able to use it.

This matters because COVID-19 should have been, by any reasonable standard, a much easier case for emergency flexibilities than climate change is. COVID was acute; climate change is chronic. COVID struck everywhere, globally and simultaneously; climate mitigation is needed most where emissions are highest, creating divergence in members' interests. COVID-19 is causally traceable to a single mutating virus; virtually none of the specific known contributions to climate change satisfy that standard. And COVID was already enumerated explicitly in Paragraph 5(c), which names epidemics. If that did not produce fast action or comprehensive coverage of all relevant IP tools, a climate trigger which Part IV demonstrated lacks even Paragraph 5(c)'s express textual listing, and which suffers from the additional disanalogy of gradualist, cumulative harm not bounded by national borders-should be expected to encounter

at least as much delay and dilution, if not more. The formal waiver process embedded in Part VII is designed with that expectation in mind (narrow scope; but also realistic timelines; and a know-how provision that the COVID waiver discussed above notably lacks), not with any assumption that a climate trigger would act faster than the above history suggests it would.

C. Option 3 - Strengthening WIPO GREEN

WIPO GREEN³⁵ has seen remarkable growth on the raw numbers scale, expanding significantly since it replaced the Eco-Patent Commons pilot program, which officially ended in 2016 as WIPO GREEN's forum took root and replaced the former royalty-free pool structure. By mid-2022, WIPO GREEN reported over 120,000 technologies, needs, and experts registered in the platform, as well as over 2,000 users from 110 countries and upwards of 1,000 successful matches made between technology providers and seekers; a year later³⁶ the database boasted upwards of 130,000 green technology innovations, claiming status as the UN' "largest repository" of its kind. That growth narrative favors the marketplace approach over the royalty-free pooling structure EcoPatent Commons pursued (discussed in Part III) on its face: WIPO GREEN only requires member organizations to provide information about their intellectual property, instead of asking them to share ownership rights; relaxing participation costs in institutional terms. But that admission also explains why it hasn't solved the affordability problem. "Connections made" measures interest exchanged, not transactions finished; WIPO GREEN's showcased metrics account for introductions between technologies-havers and seekers, not finalized licences, joint-development agreements, or even technology deployments. This is the disconnect this Argument hinges on: technology is being "effectively transferred" according to WIPO GREEN' metrics, but not necessarily in the tangible, deployed sense India' critiques center on. Listing a patent and introducing two parties to each other does not ensure the affordability, license completion, or deployment that is the actual barrier highlighted in the Abstract. At COP30 last year in Belém, Parties agreed to the Belém Technology Implementation Programme, a decision that extends UNFCCC-wide cooperation on technology throughout at least 2034 in principle, while another decision was concurrently adopted that modifies the Climate Technology Centre and Network' mandate³⁷. Like WIPO GREEN before it (or Eco-Patent Commons, for that matter) the forward-looking Programme pledges Parties to engage more with "enabling environments" and "national innovation systems" without creating new mandatory language or modifying the IP rights structure established by TRIPS. This does not contradict the Article' primary Argument; simply giving the CTU more offices does not change its foundational obligation-qf conduct. Neither does

creating an intentionally vague, sprawling coordination platform. If there is political will to upgrade the institutional architecture to actually compel technology transfer, it is just as possible now as it was when these programs were conceived. But that requires policy change on top of what WIPO GREEN already does, which leads back to the affordability gap. WIPO GREEN represents the political low-cost option of the three examples provided and, ironically, therefore the option least able to address said problem by itself.

D. Synthesis

None of the three mechanisms as we understand them lives up to what we are looking for on their own merits. Option 1 provokes no legal controversy but has been entirely politically moribund for more than ten years and contains no drivers for rewriting that verdict. Option 2 enjoys actual precedent, but the precedent set by the COVID waiver suggests its strength cuts toward slower, narrower, more compromised solutions than swift ones and still leaves untouched the non-patent barriers India itself enumerates such as financing and infrastructure. Option 3 scales gracefully and has been politically uncontested, but doesn't address price. The proposal we offer is a way of rendering Option 1 politically palatable by yoking it to Option 2: compliance with binding Article 66.2 benchmarks by a Member becomes the fulcrum that determines their susceptibility to the narrow compulsory-licensing trigger so that developed-country Members have a meaningful choice between complying with enforceable transfer targets or exposing themselves to override risk with WIPO GREEN humming quietly beneath both as the administrative layer that logs and facilitates any resultant licences or transfers, rather than as an independent solution. The details of this hybrid are in Part VII, where we include the safeguards whose absence the COVID waiver's track record suggests is indefensible: a know-how clause, no exemption for manufacturing capacity that would neuter its own effectiveness, and a sunset and review period designed to address the objection from Part IV that this is an episodic tool and functions create open-ended risk.

VII. THE HYBRID FRAMEWORK

The proposal built around two operative tiers (plus an administrative tier), designed explicitly around (a) the audiences whom Article 66.1 and Article 31 actually reach and (b) the different failure modes that Parts IV and VI identify at the ICJ analogy and COVID precedent respectively. The tiers below are proposals for prospective WTO lawmaking, not interpretations of existing TRIPS law. The existing-law/proposed-law line is drawn explicitly, tier-by-tier as

introduced below, and in full once both tiers are on the table.

Tier One - binding Article 66.2 benchmarks (Primary mechanism, LDC-targeted): Since LDC stakeholders' binding constraint is not legal exposure to infringement claims but rather transfer-in practice, this tier does the heavy lifting for that group. Tier One replaces existing IPCR's non-compliance self-reporting with binding minimum volume/value targets of LDC-directed technology transfer agreements per review period, subject to independent review by the TRIPS Council rather than mere acknowledgement³⁸. This tier moots no actual patent rights, and so should face far less principled resistance than Tier Two. Political viability depends wholly on the upside Tier Two provides.

Tier Two - conditionally triggered, green-tech narrow compulsory licensing provision (Backstop mechanism, non-LDC developing-country-targeted): Where a Member has WTO-notified declaration modeled on Paragraph 5(c)'s self-determining structure from Part II, and analogous to the evidentiary demonstration India's own Paragraph 4(c) filing (BUR-4) already completed in Part V that a specific green technology is not available to that Member on reasonable commercial terms AND that same Member has submitted adequate evidence of its own climate vulnerability to establish circumstances of extreme urgency. The urgency finding is domestically scoped rather than resting that harder, contestable demonstration from Part IV that beneficiaries of the remedy will solely domestically contain the sunk finding has exclusively to do with applicant Member's own risk/exposure.

Important Threshold Disclosure: Nothing. This needs saying front and center because it dictates everything that follows in regard to feasibility. Article 66.2 on its current terms imposes only a generalized mandate that developed-country Members "provide incentives to enterprises and institutions in their territories for the transfer of technology to LDC Members." It provides no statutory text from which to derive minimum volume/value thresholds, independent audit mandate, or consequences for failures to comply. Any interpretation of Article 66.2 that includes these is therefore not interpreting Article 66.2 as written but altering it. Secondly, not all available WTO amendment instruments are created equal substitutes for one another. Plain TRIPS Council review can enhance certain monitoring and reporting aspects but cannot add new binding substantive obligations. An Article IX: 2 interpretation of Article 66.2 is limited by the terms of Article IX:2 to clarifying the meaning of an existing WTO obligation; it cannot simultaneously create the conditions enabling that interpretation to change existing Members binding obligations. If Tier One's minimum volume/value metrics and review mechanism are to have binding force and DSM consequences, they must be added to Article 66.2, and that requires a formal treaty amendment comparable to Article 31bis - that is, a treaty amendment

passed under Article X of the WTO Agreement (the Article we used to introduce Article 31bis in 2005), not an Article IX:2 clarification. Tier One is, from the outset, a candidate for the higher threshold of Article X.

Tier Two's conditional activation is linked to Tier One via a similar loophole: Article 31 contains no clause that one Member's demonstrated failure to meet its Article 66.2 obligations causally affects the evidentiary burden available to all other Members under Article 31(b).

TRIPS today; it attaches a new substantive consequence to Article 66.2 non-compliance, rather than merely restating an existing rule, so it is proposed here as an add-on requiring the same Article X amendment process rather than a TRIPS Council decision or Article IX:2 interpretation. Both tiers are presented here as proposals for future WTO lawmaking, rather than entitlements Members already hold under the current text. Three of these choices respond directly to documented failures of the COVID-19 waiver analyzed in Part VI: (1) The mechanism covers technical know-how as well as the patent itself, because a patent-only mechanism could still prove insufficient where effective deployment depends on know-how and manufacturing capacity, as happened with the COVID-19 waiver.³⁹ Because Article 31 governs patented inventions rather than undisclosed information, any know-how component would require its own legal basis under the TRIPS Agreement and is not intended to reflect existing TRIPS compulsory-licensing powers. (2) The mechanism has no carve-out for Members who already hold manufacturing capacity, because such a carve-out was itself what hollowed out the COVID-19 waiver's usefulness. (3) It has a mandatory sunset clause tied to periodic review based on climate-science updates, which responds to the point from Part IV that any episodic legal tool needs some way of accounting for its own implications in light of ongoing, intergenerational harm.

A fourth choice responds to the mitigation/ adaptation distinction from Part IV. Adaptation-related technologies (think flood barriers, drought-resistant cultivars, desalinization infrastructure) qualify under a standard evidentiary showing about need within the meaning of paragraph (c), since there is no locally-sourced workaround to adapting to sea-level rise or desertification; the structure therefore matches Doha's domestically-contained-remedy logic most closely. Mitigation technologies (think carbon capture and storage) must clear one additional hurdle that the technology could not be obtained through Tier One channels or from WIPO GREEN-mediated licensing on reasonable terms because part of their benefit is avoidance of exclusive IP rights elsewhere, and the case for denying exclusivity is therefore that much weaker.

This brings us to the linkage that makes both tiers politically coherent. Under this linkage, the

framework described above would trigger a modified evidentiary standard and expedited review under Tier Two where the developed-country Member against whom a waiver is invoked is in Tier One non-compliance. In other words, the same piece of evidence that activates Tier Two's modified evidentiary hurdle—documented noncompliance with IPNs by developed-country Members—also serves as proof that need within the meaning of paragraph (c) exists. This is the mechanism proposed in Part VI's synthesis section. It converts this proposal's take on binding Article 66.2 compliance from an unenforced aspiration into something that is part of another Member's own risk-management decision-making process: it changes the incentive structure that has sustained twenty years of deadlock by confronting defensive policymakers with a true cost to leaving the matter unresolved, rather than merely asking them to sign onto the same voluntary commitment from last time but in stronger language.

To function as such, however, four further specifications are needed:

First, the finding of non-compliance that triggers Tier Two's modified evidentiary hurdle is not litigated anew by the Member who invokes the waiver. Since Tier Two articulation would be administered by the same TRIPS Council review procedure that already administers Tier One, a developed-country Member's failure to meet its own benchmarks would become an institutional fact of the matter before any Tier Two invocation takes place, rather than a factual counterclaim that the invoking Member must prove alongside its basic eligibility for the waiver. Second, this paper's reference to a "modified evidentiary standard" above is specifically a rebuttable presumption, not an exemption from Article 31(b)'s terms. A demonstrated shortfall on Tier One shifts the burden of proof onto the developed-country Member to prove that the technology was available to the invoking Member on reasonable commercial terms; it does not leave the invoking Member with the uphill task of disproving that same availability from a position of neutrality.

Third, because Tier Two self-determines along the lines of Paragraph 5(c), the licence itself would be issued (where occurring domestically) and initially reviewed at home, along the agency-to-judicial course laid out in Part V's Natco Pharma example, rather than via some ex ante WTO vetting process; should a developed-country Member believe that declaration was made in bad faith, it can challenge that fact via standard WTO dispute settlement, where one would expect the self-judging nature of the underlying declaration to attract the same kind of deferential, good-faith review standard the WTO has given other self-assessing treaty provisions have been given, rather than being judged *de novo*.

Fourth, both Tier One's benchmarks and the burden-shifting rule above would have to live in

the same instrument. A treaty amendment adopting justiciable Article 66.2 benchmarks without also amending Article 31 or some other provision to account for the evidentiary linkage would leave Tier Two' discount without effect, as Article 31 by itself does not today allow one Member's domestic default to water down the standard applicable to another Member. None of this prevents WIPO GREEN from serving as the administrative layer described above. Tier One' audit reporting and any Tier Two licences would go through WIPO GREEN' existing registry system. WIPO GREEN was built for uploading notices, so this finally plugs the transparency gap this paper diagnosed in Part VI: WIPO GREEN presently tracks "connections made" rather than completed transfers. Giving those connection notices a subsequent compliance role would spare negotiators from building an institution ab novo. That said, WIPO GREEN houses no existing mandate to audit countries' implementation of TRIPS or Article 66.2 as of right. Entrusting WIPO GREEN with that task accordingly represents a second prong of proposed institutional reform, one that in my view would probably necessitate either a WIPO-WTO comity agreement or some analogous grant of institutional authority rather than being direct Upfront objection this whole tool will move as slowly as the COVID waiver did. Objection answered in text above. Tier One need not replicate the waiver-style Article-XVIII ministerial negotiation that bogged down the COVID response for over a year and a half; at the low end of ambition, voluntary benchmarks or intensified transparency obligations are something the TRIPS Council could incubate via its normal review procedures; mandatory benchmarks with legally binding consequences would still require a WTO legal instrument like the one discussed above. The purpose of Tier Two is to be the slow-moving fallback option, not the central instrument. Its deterrent value is supposed to work even before it is actually triggered, by motivating Members to avoid triggering it by hitting Tier One targets instead. It's true that the ICJ' s July 20 ordering does not give the world a copyright-flexibility ready-to-go. But Paragraph 69 does give the world an authoritative statement of the legal seriousness and emergency of climate change that may give countries looking to take climate emergencies seriously much better textual footing for an Article 31(b) argument than they had on June 22, 2022. If that plant ever grows into a waivers word-new flexibility under TRIPS, Paragraph 69 gives it a better seed to grow from than professional intuition alone.

VIII. CONCLUSION

This paper began with one leading question posed sharply: if patent law bent for a health emergency in 2001, why couldn't it bend for a climate emergency today? The answer given in

the preceding Parts is more nuanced than that question implies, and it is that nuance itself which comprises the paper's central contribution.

The ICJ's 23 July 2025 Advisory Opinion does not provide the international trading system with a ready-made TRIPS flexibility. It mentions nothing about patents, nothing about TRIPS, and nothing about compulsory licensing, and its own framing of technology transfer is nestled within a duty to cooperate that the Court allowed to remain an obligation of conduct (rather than of result) and that same soft-compliance architecture that has rendered Article 66.2 weakly operationalized for twenty years. What the opinion does provide, this paper has argued, is narrower but helpful: authoritative language from the International Court of Justice framing climate change as something other than aspirational policy – binding legal obligation – that strengthens the interpretive case for an Article 31(b) argument while stopping well short of supplying a TRIPS-specific determination like Paragraph 5(c) provided for health in 2001, when the Doha Ministerial Conference let Members “determine for themselves what constitutes a national emergency.”

The Opinion's focus on capability in its treatment of common but differentiated responsibilities, rather than assigning historical blame, aligns with Doha's own logic more neatly than would a reparative reading have, and it is that symmetry which makes the analogy above legally compelling rather than merely rhetorically convenient.

But this paper has tried at the same time not to paper over the places where the analogy begins to strain. An epidemic is acute; verified domestically; and solved with a treatment consumed domestically: climate change, on the Court's own accounting, is cumulative; intergenerational; and neither confined to nor caused predominantly by the state seeking the licence. That asymmetry points directly back to Article 31(f)'s market-localisation requirement, and it is why adaptation technologies (where the solution is domestically-contained) are treated separately from mitigation technologies above (where it isn't). That same worry also explains why the proposed COVID-19 TRIPS waiver – focused on a single pathogen, with a materially uniform emergency shared across countries – is treated above as a substantially easier case than climate change is likely to be and a more honest precedent than 2001 Doha, where twenty months of negotiations resulted in a narrow, hard-compromised outcome that left know-how transfer unaddressed and carved out the very Members most capable of using it. Something triggering under climate but lacking even Paragraph 5(c)'s firm textual foothold should be expected to take at least as long, if not longer, and any proposal that doesn't acknowledge that risk is in danger of designing a mechanism that will seem decisive on paper and prove marginal at the point of crisis.

That danger is what informs the proposal's preference for hybrid over either pure option. Compulsory licensing triggers along only reinforce what the COVID waiver is almost certain to become: slow, highly-contested, and probably diluted by the time it emerges. Article 66.2 benchmarks alone replicate their own two-decade history of being requested and denied. Voluntary technology marketplaces like WIPO GREEN increase overall volume from approximately 120,000 to 129,799 technologies between 2022 and 2023⁴⁰, without shrinking the affordability gap which is the real gripe behind India's own submissions to the UNFCCC. By linking developed-country Member's risk under Tier Two to its own Tier One compliance record, the paper suggests that teach triggering event stops being another ask and starts being part of a Member's own risk management calculus. The tiers also retain the status quo differentiation between LDCs and non-LDC developing countries. As of this writing, LDCs benefit from Article 66.1's transition period, which runs until 1 July 2034⁴¹ subject to the scope and exceptions applicable to that provision (most notably Articles 3, 4 and 5, which apply to LDCs from the outset) and may therefore benefit more from something approaching mandatory technology transfer obligations. Non-LDC developing countries like India would remain subject to TRIPS in full and retain Article 31 as the existing TRIPS fallback for permitted use of patented technology. This helps keep both ends of the proposal tailored to the actual legal position each cohort occupies, rather than wiping out that distinction by treating "developing countries" as a homogeneous bloc. Likewise, the preceding section aims to speak to the existing literature identified in Part III above rather than past it. To the extent that scholarship tying climate action to a 2025 entitlement-based framework⁴² anticipates the emergency-trigger analogy or observes that TRIPS leaves "emergency" undefined, this paper elaborates on what came before rather than repeats it. My claim is that the ICJ's 2025 opinion-which states very clearly that climate change fits comfortably into the ARSIWA definition of emergency, but came down after most of the literature mentioned above-bolsters the interpretive argument for filling that gap as it relates to climate. It does not, however, strengthen it to the same degree that the Fourteen Member-strong 2001 Ministerial Conference strengthened it for health, and only if the resulting mechanism is designed to narrow, evidence-based, and tightly bound to a Member's international obligations under the UNFCCC rather than TRIPS. Lastly, none of this should be read to imply that compulsory licensing of green technologies is a panacea for green-technology transfer. Issues like financing, absorptive capacity, and regulatory readiness that multiple IP clauses are named alongside in India's own BUR-441 lie outside the ambit of what any TRIPS-based mechanism could address, and literature questioning whether patents are the bottleneck at all is grappled with here rather than avoided. All of this is just to say that

what this paper argues is considerably less. Instead, what this paper argues is that the legal case for climate change as a TRIPS-relevant emergency got stronger on 23 July 2025 than it was before; that the strongest argument for doing so is also more narrowly tailored than the abstract debate over that question has recognized; and that a mechanism designed to “fail safely” (trigger provisions that narrow in scope, expire by sunrise rather than sunset, and condition TRIPS waivers on something other than countries signing those waivers alone) stands a better chance of navigating NAMA politics than anything built uncritically on the extreme fallout of 2001’s Doha Ministerial Conference. Whether WTO Members let the TRIPS Council even test that hypothesis is, as it has been with regard to Article 66.2 for twenty years now, a question of political and not legal will.

¹ WTO, Declaration on the TRIPS Agreement and Public Health, ¶ 4, WT/MIN(01)/DEC/2 (Nov. 14, 2001).

² Agreement on Trade-Related Aspects of Intellectual Property Rights art. 31, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299.

³ *Obligations of States in Respect of Climate Change, Advisory Opinion*, I.C.J. Reports 2025, ¶ 73 (July 23, 2025) (General List No. 187), <https://www.icj-cij.org/case/187> [hereinafter *Climate Change AO*].

⁴ *Climate Change AO*, supra note 3, ¶¶ 73–74.

⁵ *Climate Change AO*, supra note 3, ¶¶ 224–229 (holding that, taking subsequent agreement of the parties into account under the Vienna Convention on the Law of Treaties art. 31(3)(a), 1.5°C is the parties’ agreed primary temperature goal); see also House of Commons Library, *Climate Change at the International Court of Justice* (2026) (summarizing the 1.5°C and “best available science” holdings).

⁶ Govt. of India, Fourth Biennial Update Report to the UNFCCC (Dec. 30, 2024); India, Statement at COP29, Baku (Nov. 2024).

⁷ TRIPS Agreement, supra note 2, art. 66.2.

⁸ David M. Fox, *Technology Transfer and the TRIPS Agreement Are Developed Countries Meeting Their End of the Bargain?*, 10 Hastings Sci. & Tech. L.J. 1, 24 (2019).

⁹ TRIPS Agreement, supra note 2, pmbl.; Donald Harris, *TRIPS After Fifteen Years: Success or Failure, as Measured by Compulsory Licensing*, 18 J. Intell. Prop. L. 367, 382 (2011).

¹⁰ World Trade Organization, TRIPS and Public Health: Frequently Asked Questions, https://www.wto.org/english/tratop_e/trips_e/tripsfacsheet_e.htm (explaining that the WTO General Council adopted the temporary waiver on 30 August 2003, that Members agreed on 6 December 2005 to incorporate the waiver permanently into the TRIPS Agreement, and that the resulting Protocol entered into force on 23 January 2017, inserting Article 31bis and an accompanying Annex and Appendix into the Agreement).

¹¹ World Trade Organization, Canada Is First to Notify Compulsory Licence to Export Generic Drug (Oct. 4, 2007), https://www.wto.org/english/news_e/news07_e/trips_health_notif_oct07_e.htm (reporting that Rwanda notified the WTO on 17 July 2007 of its intention to import 260,000 packs of a triple-combination antiretroviral (TriAvir); that the Canadian Commissioner of Patents granted Apotex Inc. a compulsory licence to manufacture and export the product on 19 September 2007; and that Canada notified the WTO of the licence on 4 October 2007).

¹² Bronwyn H. Hall & Christian Helmers, *The Role of Patent Protection in (Clean/Green) Technology Transfer*, 26 Santa Clara Computer & High Tech. L.J. 487 (2010); Copenhagen Economics A/S & IPR Co. A/S, *Are IPRs a Barrier to the Transfer of Climate Change Technology?* (2009) (report commissioned by the European

Commission, DG Trade).

¹³ *Communication from Ecuador, Contribution of Intellectual Property to Facilitating the Transfer of Environmentally Rational Technology*, WTO Doc. IP/C/W/585 (Mar. 5, 2013).

¹⁴ Martin Khor, *Climate Change, Technology and Intellectual Property Rights: Context and Recent Negotiations*, South Centre Research Paper No. 45 (May 2012), https://www.southcentre.int/wp-content/uploads/2013/05/RP45_Climate-Change-Technology-and-IP_EN.pdf.

¹⁵ Kim Lukac, *Compulsory Licensing for Green Technology Transfer* (June 2017) (unpublished LL.M. thesis, Tilburg University), <http://arno.uvt.nl/show.cgi?fid=142869>; Ya-Lan Wang, *Patent Protection for Green Technologies – Is Compulsory Licensing the Way of Promoting Technology Transfer?* (Sept. 12, 2019) (MIPLC Master Thesis Series 2018/19), <https://ssrn.com/abstract=3684342>.

¹⁶ Neel Maitra, *Access to Environmentally Sound Technology in the Developing World: A Proposed Alternative to Compulsory Licensing*, Sabin Center for Climate Change Law, Columbia Law School (Dec. 2009), https://scholarship.law.columbia.edu/sabin_climate_change/67.

¹⁷ Ronald Eberhard Tundang, *Aligning Climate Needs and Intellectual Property: An Entitlement-Based Framework for Green Technology Transfer*, 28 J. Int'l Econ. L. 441 (2025).

¹⁸ Jessyca Van Weelde, Xiaoping Wu, Ting-Wei (Alex) Chiang & Bassam Peter Khazin, *Reflection on the Implementation of Decision on Implementation of Article 66.2 of the TRIPS Agreement: Incentive for Technology Transfer to Least-Developed Countries*, WTO Staff Working Paper ERSD-2023-12 (Dec. 13, 2023), https://www.wto.org/english/res_e/reser_e/ersd202312_e.htm.

¹⁹ Jorge L. Contreras, Bronwyn H. Hall & Christian Helmers, *Pledging Patents for the Public Good: Rise and Fall of the Eco-Patent Commons*, 57 Hous. L. Rev. 61, 76, 122–24 (2019).

²⁰ *Id.*

²¹ *Request for an Advisory Opinion Submitted by the Commission of Small Island States on Climate Change and International Law*, Case No. 31, Advisory Opinion (ITLOS May 21, 2024).

²² *Verein KlimaSeniorinnen Schweiz & Others v. Switzerland*, App. No. 53600/20, ¶ 573 (Eur. Ct. H.R. Apr. 9, 2024).

²³ *Neubauer v. Germany*, 1 BvR 2656/18 (BVerfG Mar. 24, 2021).

²⁴ *The State of the Netherlands v. Urgenda Foundation*, ECLI:NL:HR:2019:2007 (Sup. Ct. Neth. Dec. 20, 2019).

²⁵ Vienna Convention on the Law of Treaties art. 31(3)(c), opened for signature May 23, 1969, 1155 U.N.T.S. 331 (entered into force Jan. 27, 1980).

²⁶ Climate Change AO, *supra* note 3, ¶¶ 263–267

²⁷ Climate Change AO, *supra* note 3, ¶ 148

²⁸ See *supra* note 6.

²⁹ See *supra* note 6.

³⁰ World Trade Organization, *Members Continue TRIPS Implementation Review Discussion*, Address IP Notification Obligations, WTO News (Mar. 21, 2025), https://www.wto.org/english/news_e/news25_e/trip_21mar25_e.htm (stating that, since 2003, developed-country Members have submitted over 400 reports detailing technology-transfer actions and commitments under Article 66.2 of the TRIPS Agreement, and that the TRIPS Council has conducted 21 reviews of those reports).

³¹ Van Weelde et al., *supra* note 19.

³² *Natco Pharma Ltd. v. Bayer Corp.*, Compulsory Licence Application No. 1 of 2011 (Controller of Patents, Mumbai, Mar. 9, 2012); *Bayer Corp. v. Union of India*, MIPR 2013 (2) 97 (IPAB); *Bayer Corp. v. Union of India*, 2014 (60) PTC 277 (Bom).

³³ *Novartis AG v. Union of India*, (2013) 6 SCC 1.

³⁴ WTO, Ministerial Decision on the TRIPS Agreement, WT/MIN(22)/30, WT/L/1141 (June 17, 2022) [hereinafter COVID-19 TRIPS Decision].

³⁵ World Intellectual Property Org., *WIPO GREEN Year in Review 2022*, <https://www3.wipo.int/wipogreen> (reporting, as of July 2022, over 120,000 technologies, needs, and experts in the WIPO GREEN database, more than 2,000 registered users across 110 countries, and over 1,000 recorded connections between technology providers and seekers).

³⁶ World Intellectual Property Org., *Decade of Green Innovation: Celebrating 10 Years of WIPO GREEN's Impact on Technology Exchange and Climate Solutions* (Nov. 28, 2023), https://www3.wipo.int/wipogreen/en/news/2023/news_0024.html (reporting that, by 2023, the database had grown

to nearly 130,000 green-technology innovations, with 2,500+ users and 153 partners).

³⁷ Decision 18/CMA.7, Belém Technology Implementation Programme, UNFCCC Doc. FCCC/PA/CMA/2025/19/Add.2 (Mar. 30, 2026); Decision 17/CMA.7, Review of the Functions of the Climate Technology Centre, UNFCCC Doc. FCCC/PA/CMA/2025/19/Add.2, ¶ 3 (Mar. 30, 2026) (extending the Climate Technology Centre's term to the end of 2041); see also UNFCCC, A New Era for Climate Technology to Support Developing Countries: The Belém Technology Implementation Programme (Feb. 18, 2026), <https://unfccc.int/news/a-new-era-for-climate-technology-to-support-developing-countries-the-belem-technology-implementation>.

³⁸ See supra Part III (discussing Fox, supra note 8, and Van Weelde et al., supra note 19).

³⁹ See supra Part VI.B (discussing COVID-19 TRIPS Decision, supra note 35).

⁴⁰ See supra Part VI.C and accompanying notes.

⁴¹ WTO Council for TRIPS, Extension of the Transition Period Under Article 66.1 of the TRIPS Agreement for Least Developed Country Members, IP/C/88 (June 29, 2021) (extending the transition period to 1 July 2034). ⁴² Tundang, supra note 18.

