BRICS Climate Leadership Agenda

Report on IP Options to Enhance Climate Change Related Technology Cooperation

Taking note of the Intergovernmental Panel on Climate Change (IPCC)'s conclusions regarding the need for rapid and far-reaching transitions across all sectors and systems, including through the deployment of low- and zero-emission technologies and increased technological efficiency and adoption, the BRICS Contact Group on Climate Change and Sustainable Development presents this report outlining options to leverage intellectual property (IP) for strengthening technology cooperation among members, as well as with external stakeholders, and increasing the uptake of climate change related technologies, as well as facilitating peer-to-peer learning, knowledge sharing and capacity building among members.

The following options are presented in accordance with the principles and provisions of the United Nations Framework Convention on Climate Change (UNFCCC) and its Paris Agreement, on a non-binding, non-prejudicial, non-prescriptive and non-exhaustive basis without introducing obligations to BRICS members or prejudging future work and with a view to researching alternatives to foster international cooperation. The aim is to identify climate change related IP arrangements with potential for future consideration, as appropriate, by BRICS members, including through IP BRICS and other fora dealing with intellectual property.

For the purposes of this report, climate change related technologies (CrTs) are those that help us reduce greenhouse gas emissions and adapt to the adverse effects of climate change. This report will not aim to prescribe or estipulate the scope of climate change related technologies to be covered in each presented modality for IP cooperation.

1. CLIMATE CHANGE RELATED PATENT POOL

1.1. What Is a Patent Pool for Climate Change Related Technologies?

1.1.1. A patent pool is a collective licensing arrangement in which multiple entities—such as companies, research institutes and state-owned enterprises—agree to share their IP rights into a single platform providing a "one-stop" license that drastically reduces the need for separate negotiations on each patent.[1]

1.1.2. Patent pools address inefficiencies arising from "patent thickets" where multiple firms own complementary patents necessary for producing a specific product, effectively blocking each other from bringing innovations to market. By organizing these complementary IP rights under a single contract, patent pools enable both pool members and third parties to access the complete set of required patents through streamlined licensing agreements. The pool distribute the collected fees among participant in proportion to agreed criteria such as the overall value of pooled patents.

1.1.3. A model focused on CrTs could comprise IP in areas with climate potential, like solar photovoltaics, wind turbines, batteries, carbon capture and hydrogen systems, among others. By lowering transaction costs and avoiding "royalty stacking" (when a company has to pay royalties to multiple patent owners to use different technologies in a single product), a patent pool could accelerate the uptake of CrTs that are critical for just transitions. Patent pooling has been deployed successfully in other industries (e.g., the Medicine Patents Pool - MPP). In a climate context, a potent pool could encourage collaborative R&D, generate licensing revenues for patent holders and boost technology transfer and climate action between BRICS members.

1.2. What are Potential Benefits and Challenges of Patent Pools for Climate Change Related Technologies?

1.2.1. A carefully structured patent pool can bring multiple advantages and support efforts to expand the use of renewable energy and other solutions.

[1] World Intellectual Property Organization. (2014). Patent pools and antitrust: A comparative analysis. https://www.wipo.int/documents/743993/747687/patent_pools_report.pdf/8690993c-639b-d12d-eb8f-fff1125cf13f?version=1.2&t=1671199878003

Unified access to essential climate change related patents can have far-reaching implications for cost, scale and pace of deployment.

1.2.2. One of the most immediate benefits is the reduction of royalty stacking[2]. CrTs in some cases involve many patented components. For example, manufacturing a solar panel might require rights to cell process patents, module assembly patents and inverter patents. Companies would have to negotiate licenses with each patent owner separately, incurring high fees or facing refusals. A single pooled license lowers transaction costs by consolidating fees. Empirical data from the pharmaceutical sector provides a useful parallel: the MPP achieved significant drug-cost savings for HIV treatment against a relatively low annual operational cost (see section "Case Studies" below). Although CrTs differ from pharmaceuticals, the principle is similar and could contribute to making CrTs more affordable and thus more viable as climate solutions for countries lacking fiscal space.

1.2.3. Aside from cost reductions for users, a patent pool can also be profitable for contributors, especially if it licenses to entities outside BRICS on royalty-bearing terms. The broad portfolio of CrTs held by members could translate into a significant financial inflow that would be distributed among the pool's patent owners, creating fresh income sources for research institutes and energy firms.[3] Additional financial inflows would also help fund research covering relevant but niche technologies that remain underutilized and underlicensed. Similar structures in other sectors (e.g., DVD patent pools) have successfully collected licensing fees worldwide (WIPO Magazine Special Edition, 2009). An open pool model could help recoup R&D expenditures in climate technology while facilitating the diffusion of technologies that are critical for just transitions.

1.2.4. By centralizing IP and eliminating IP clearance delays stemming from protracted license-by-license negotiations, a pool would also allow projects to move forward faster. The availability of patented technology on an

[2] WIPO Magazine Special Edition. (2009). Patent pools: Sharing technology. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_121_2009_02.pdf

[3] Kwon, et al. (2023). Effect of an open patent pool strategy on technology innovation in terms of creating shared value. Retrieved from https://www.sciencedirect.com/science/article/abs/pii/S0040162522007727

organized display (usually through a web portal) could act as a catalyst for technology transfer and shorten the lag between invention and deployment. Time is particularly critical for CrTs, as deploying solutions sooner has compounding benefits (more emissions avoided, faster learning curve improvements).

1.2.5. A unified framework limits the possibility of overlapping claims and infringement disputes (WIPO, 2014). In a pooled system, conflicts are preempted by standardized cross-licensing, benefiting small and medium-sized companies that cannot bear the cost of litigation. It could also appeal to foreign investors, who often look for IP clarity before committing capital[4]. Essentially, by clearing patent risks, the pool de-risks investments in low-emission projects, potentially lowering the cost of capital for these projects. Given the magnitude of climate investment needs within BRICS, this would be a significant outcome.

1.2.6. A patent pool could also incentivize intra-BRICS investment in climate change related innovation, as it would encourage local companies to venture into manufacturing or improving technologies they might otherwise avoid for lack of expected licensing or fear of infringement (Baron and Pohlmann, 2015). This can increase competition, driving down costs and improving the quality of critical low-emission and renewable energy inputs. It also forces companies to differentiate through efficiency and innovation beyond the pooled baseline, potentially leading to further inventions that could also go into the pool—creating a positive feedback loop. Over time, the increased manufacturing base improves economies of scale and learning, further reducing costs of CrTs (learning-by-doing effect)[5].

1.2.7. That effect could be compounded where the pool encompasses a diverse portfolio with complementarities, as is the case for CrTs-related patents held by BRICS. By pooling technologies where specific members have expertise (such as solar panels, wind turbines, biofuels and carbon capture mechanisms), each country gains easier access to breakthroughs

[4] Baron & Pohlmann. (2015). *The effect of patent pools on patenting and innovation: Evidence from contemporary technology standards*. Retrieved from https://wwws.law.northwestern.edu/research-faculty/clbe/innovationeconomics/documents/baron_pohlmann_effect_of_patents.pdf

[5] Thomassen. (2019). A review on learning effects in prospective technology assessment. Retrieved from https://www.sciencedirect.com/science/article/abs/pii/S1364032120302288

from the others and diversifies their respective portfolio. This synergy can spur industrial diversification and job creation, as local manufacturing becomes more viable when advanced patents are accessible at reasonable rates.

1.2.8. A pool that is open for outside license applications could also be a powerful asset for South-South cooperation, as it would expand its cost-saving benefits to other developing partners and spur technology diffusion and adoption beyond BRICS. This would amplify the pool's contribution to climate action and send a resounding political statement of the group's commitment to international cooperation and solidarity. Moreover, licensing fees collected from third parties outside BRICS could provide extra revenue channeled back into R&D efforts within BRICS, creating another virtuous cycle that strengthens local innovation capacity and expands the pool's impact on addressing climate change.

1.2.9. A feasibility challenge concerns aligning patent holders' contributions with the specific demand for those patents, preventing the pool from becoming merely an assemblage of low-priority or non-core IP. If contributors offer mostly fringe or superseded patents that fail to address pressing climate technology gaps, the pool may struggle to attract licensees. Achieving the right balance requires inclusive yet targeted outreach to patent owners, focusing on inventions that genuinely correspond to identified user needs. A demand-driven approach would involve consultation with potential licensees—such as manufacturing firms and public bodies—to ensure the pool reflects real market demand rather than a purely supply-driven selection of patents that is not practical for would-be users.

1.2.10. Furthermore, a patent pool could also seek to foster cooperation with patent holders in developed countries, aiming at promoting technology transfer from the North to the Global South, in a manner that is complementary and supportive of work undertaken by the Technology Mechanism established under the UNFCCC.

1.2.11. While climate-focused patent pools aim to mitigate inefficiencies caused by "patent thickets"—situations in which multiple parties hold complementary patents essential for a specific technology—questions remain regarding the inclusion of patents not held by entities from BRICS

nations. Specifically, there is insufficient clarity on how patents owned by enterprises, universities, or individuals based outside of these countries would be accessed, integrated, or incentivized to join such pools.

1.2.12. The Climate Technology Centre and Network (CTCN), as the implementation arm of the UNFCCC Technology Mechanism, could help align the pool's patent portfolio with real-world climate needs. By mobilizing its broad membership, providing capacity-building resources to potential licensees and helping overcome information gaps and trust barriers that often hinder voluntary patent sharing, the CTCN could enhance the pool's effectiveness. Within this recognized structure, patent holders would gain greater visibility and trust in the pool's public-good mission, while developing-country stakeholders would benefit from technical assistance in adapting licensed technologies.

1.2.13. A second challenge arises in designing a governance structure that reconciles the public-welfare objective of broad climate technology dissemination with the profit-oriented interests of private patent holders. Governments and public institutions may favor royalty schemes that minimize end-user costs, whereas industry participants may seek to maintain revenue streams. Transparent negotiations on licensing terms and multi-stakeholder oversight—representing public, private and research sectors—can help ensure balanced outcomes. Additionally, setting clear rules on royalty reinvestment can highlight the pool's commitment to climate objectives, encouraging stakeholder support, while its operating procedures reassure patent holders of fair treatment of their IP. Although challenging in a scenario with multiple stakeholders, transparency and accountability are critical to the success of a patent pool.

1.2.14. Divergent national IP frameworks constitute a third challenge, as patent coverage is not uniform across BRICS members. A technology patented in one country might be public domain elsewhere, raising questions about whether and where royalties apply. Moreover, local rules concerning patentability, compulsory licensing and technology transfer vary widely and may create complexity for both contributors and adopters. Addressing these discrepancies requires a careful mapping of each pooled patent’s legal status and the territories where it applies. The pool could maintain a centralized database indicating patent coverage, ensuring that participants understand

any limitations or exceptions. The multi-jurisdictional nature of international patent pools also increases complexity for establishing and enforcing a fair, neutral and binding dispute resolution framework. Without it, conflicts over licensing terms, IP ownership or revenue sharing may stall cooperation and deter participation.

1.2.15. Differences in anticompetition law pose a fourth challenge. Patent pools must navigate each jurisdiction's rules on collective licensing to avoid being viewed as anticompetitive, akin to a cartel that engages in price-fixing. Authorities generally favor pools that consolidate complementary (rather than competing) patents, employ transparent fee structures and remain open to any qualified entrant. Meeting these criteria may necessitate establishing an independent administrative entity and adopting fair, reasonable and non-discriminatory (FRAND) licensing policies to secure necessary regulatory clearances. Given that anti-competition concerns have historically loomed over patent pools as "cloaked cartels"[6], scrupulous design and consultation with competition authorities in advance could be advisable.

1.2.16. Complexity might also arise from divergences in national law regarding data management and confidentiality. Compliance with country specific rules and protocols on data sovereignty (where data is stored/processed), privacy protection, cross-border data transfers, confidentiality of commercial licensing details and cybersecurity standards would require robust, adaptable data governance frameworks.

1.2.17. Consideration should also be given to the pool's capacity to mobilize and leverage patent holders in developed countries, fostering cooperation to facilitate the transfer of advanced CrTs to developing countries.**1.2.14.** In overall, a patent pool harmonizes incentives: patent owners retain fair compensation and expanded market reach, while adopters benefit from simpler, lower-cost access. Its potentials appear to align with priorities and needs of BRICS members in just transitions. The net effect is a more cohesive CrT ecosystem, catalyzing large-scale climate solutions. Realizing these benefits, however, would require effort to align patent contributions

[6] Cannady, C. (2009). Access to Climate Change Technology by Developing Countries: A Practical Strategy. ICTSD. Retrieved from https://globalclimateactionpartnership.org/app/uploads/2015/08/access-to-climate-change-technology-by-developing-countries-cannady.pdf

with market demand, balance public and private interests and navigate the diverse legal frameworks of BRICS members.

1.3. Case Studies

- **Medicines Patent Pool (MPP):** Established in 2010, backed by UNITAID, MPP is a standout success in IP pooling for public good, focusing on patents related to HIV, tuberculosis and hepatitis C medicines. By 2016, it saved over USD 270 million in drug costs,[7] against an annual operational startup cost near USD 1.5 million[8]. It provides a concrete example of a pooled licensing regime helping expand access to technologies while ensuring adequate rewards for patent holders.
- **Eco-Patent Commons:** Launched in 2008 by leading corporations and the World Business Council for Sustainable Development, this platform offered free licenses for eco-friendly patents. Before its discontinuation in 2016, it had collected pledges for 248 patents, covering 94 distinct inventions.[9] Due to its philanthropic character, the majority of those patents were non-essential and uptake was modest. It provides a cautionary example of the need for pools to incorporate a structure of incentives for patent holders to commit IP covering high value, needed technologies.

[7] UNITAID. (2017). Impact story: Medicines Patent Pool. Retrieved from https://unitaid.org/uploads/impact-story_medicines-patent-pool.pdf#:~:text=tuberculosis%20more%20affordable%20and%20efficient,and%20financial%20efficiencies%20for%20LMICs

[8] UNITAID. (2008). Cost benefit analysis for UNITAID Patent Pool. Retrieved from https://www.keionline.org/misc-docs/1/cost_benefit_UNITAID_patent_pool.pdf#:~:text=a%20UNTAID%20Patent%20Pool%20focusing,norms%20in%20favor%20of%20open

[9] Contreras, J., et al. (2018). Pledging patents for the public good: Rise and fall of the EcoPatent Commons. Retrieved from https://dc.law.utah.edu/cgi/viewcontent.cgi?article=1169&context=scholarship

1.4. How Could a Climate Change Related Technology Patent Pool Be Organized and Operated?

1.4.1. Establishing a CrT patent pool would involve a multi-step process, based on careful coordination among governments, patent owners and would-be licensees.

1.4.2. A first step would be to engage with all relevant stakeholders to consult on their interest in a patent pool, as well as on key CrT areas that have economic potential and contribute to their just transitions. This may be accomplished by having each BRICS member conduct a comprehensive assessment of its technology needs to implement the UNFCCC and its Paris Agreement. Relevant stakeholders should be identified through clearly-defined and transparent criteria, such as demonstrated expertise in key CrT areas, patent ownership or significant roles in technology development and deployment. Selection should actively seek broad representation by employing diverse outreach strategies to include government agencies, private sector innovators (from startups to large corporations), academic institutions, research centers, and civil society organizations, with a particular emphasis on ensuring voices from under-represented regions and smaller entities are heard and included, to avoid overlooking critical technologies.

1.4.3. A second step would be to assign a dedicated group to conduct a feasibility study based on patent landscaping to pinpoint patents linked to key CrTs. The study should also examine each BRICS member's legal framework, aiming to ensure compatibility of the pool's licensing structure. Outcomes of that effort will inform decisions on the pool's scope (which CrT fields to start with), licensing model and economic viability. Involving IP-related international organizations, such as WIPO, could provide expertise and allow for synergies with existing initiatives under their umbrellas.

1.4.4. If the pool has been determined as feasible, BRICS members could debate a charter formalizing it as a legal entity and detailing its objective, governance model and membership admission rules, as well as hosting country or institution. Governance models could include, as appropriate, provisions for a steering committee with representatives of BRICS members. Operational guidelines would then be developed to describe, for instance, how patents would be submitted and evaluated, how licensing requests

would be handled, royalty setting methodology and how disputes would be resolved.

1.4.5. An operational trade-off is involved in choosing the scope and quality of patents included in the pool. Targeting only foundational or essential patents helps guarantee substantial value for licensees, but might limit participation. Conversely, a broader inclusion policy fosters wider membership but risks diluting the pool with marginal IP. A balanced approach could define clear selection criteria or categories that distinguish core patents from auxiliary ones, ensuring highly valuable technologies remain central while additional contributions can be included without undermining overall impact.

1.4.6. Royalty distribution among contributors presents another important operational decision. Some pools adopt simple per-patent splits, enabling straightforward calculations but potentially overlooking patents' differing market value. Others implement more nuanced formulas, weighting patents by usage, citation or essentiality. Whichever approach is chosen, transparency remains essential. Clear documentation of each patent's contribution, usage patterns and royalty share helps prevent disputes. Moreover, allocating a portion of revenues to reinvestment in climate R&D or subsidizing licenses for less-resourced users can reinforce the pool's public-good character.

1.4.7. Dispute resolution mechanisms are likewise important, given the cross-border nature of licensing arrangements. The pool could preempt conflicts with credible systems for handling disagreements quickly and fairly. International licensing arrangements typically rely on arbitration or mediation clauses under recognized bodies with specialized IP expertise. Additionally, internal expert committees could address narrower technical questions before disputes escalate to formal proceedings.

1.4.8. With the structure in place, BRICS members would engage with patent holders to encourage the initial pledge to the pool, including by organizing workshops and roadshows to publicize the initiative and match available patents with demanding industries. The pool could be launched through a web-based portal displaying available patents and licensing rates, for interested parties to apply. Modalities could also be developed to promote collaboration and cooperation with external stakeholders, including

international organizations, think tanks and patent owners in developed countries.

1.4.9. Operational aspects of the patent pool would include cataloguing pledged IP, administering the agreed royalty structure, monitoring and enforcing the terms of licenses and reporting on its operations.

1.4.10. Foreseen costs for setting up the patent pool could include fees for legal experts drawing the pool's framework agreement, membership contracts and licensing templates and administrative expenses related to setting up its governance and database and hiring administrative and operational staff. Recurring costs would include maintaining and updating the pool's database, monitoring and enforcing license compliance, translation services and expenses related to the need for continuous engagement with the private sector.

1.4.11. Blended finance approaches could offer potential for scaling up the pool's climate impact. Public or philanthropic funds could lower royalties for adopters, offset administration expenses and guarantee baseline returns for patent holders, encouraging inclusion of valuable technologies. However, coordinating multiple funding sources introduces complexity, with each source potentially having distinct reporting or governance requirements. There is also a risk of creating dependency on ongoing subsidies should donor priorities shift. A balanced approach could combine partial public or philanthropic contributions with revenue generated through royalty-bearing licenses, ensuring both affordability and financial sustainability as the pool matures. Organizers could also seek to mobilize resources and support from developed countries and Multilateral Development Banks for the pool´s operation.

1.5. Conclusion

1.5.1. Evidence shows that patent pooling can reduce project costs, shorten the time from innovation to market and increase revenue to patent holders. If applied carefully, it could yield a significant contribution to BRICS technology cooperation and climate action, building on synergies and complementarities between members' technology portfolio.

1.5.2. Key points for future consideration may be to determine the project's feasibility may include the following:

- Whether there are CrT area where the interests of BRICS patent holders and patent users align to a sufficient extent;
- Whether those specific CrTs would contribute to climate efforts and yield enough value to account for the initiative's costs;
- Whether there are sufficient commonalities between members' IP and anticompetition legal frameworks for a viable shared licensing structure
- Whether potential pledging disparities between members would constitute an impediment
- Whether there are viable royalty setting arrangements that would not exclude patent users from BRICS members facing financial gaps.
- What measures could be taken, in developing and implementing the pool, to promote cooperation on CrTs with potential partners outside of BRICS, in particular patent holders and technology owners in developed countries?

2. HUMANITARIAN LICENSING FRAMEWORK FOR ADAPTATION AND RECOVERY

2.1. What Is a Humanitarian Licensing Framework for Adaptation and Recovery?

2.1.1. Humanitarian licensing is an intellectual property approach where the primary objective is ensuring access to essential technologies for humanitarian purposes, particularly in situations where IP rights might otherwise become a barrier for vulnerable communities to benefit from critical innovations. Humanitarian licenses often permit qualified implementers (e.g., government agencies, NGOs, small producers) to use and adapt patented innovations specifically for urgent, life-saving or livelihood-protecting activities in vulnerable regions.[10]

2.1.2. A specialized framework for that approach may involve patent holders—ranging from private companies and universities to public research institutions—voluntarily granting non-exclusive licenses on terms specifically designed to facilitate affordability and availability. This is often done through mechanisms such as market segmentation (differentiating terms between high-income and low-income regions); royalty adjustments (reducing or eliminating royalty payments for specific populations or uses); or incentives to local capacity (allowing for generic competition or local manufacturing). Licensors typically retain full commercial rights in wealthier markets, while opening up access where the humanitarian need is greatest.

2.1.3. Such a framework offers significant potential for patents related to climate adaptation and recovery from loss and damage. A successful humanitarian licensing framework could encompass a wide array of adaptation-focused solutions—like water purification and desalination systems—as well as technologies needed for recovery, such as rapid-deployment emergency housing solutions, climate-resilient crop varieties for

[10] World Intellectual Property Organization. (2020). WIPO Re:Search: Sharing innovation in the fight against neglected tropical diseases, malaria and tuberculosis. Retrieved from https://www.wipo.int/publications/en/details.jsp?id=3976

replanting agricultural areas or diagnostic kits for post-disaster disease surveillance.

2.2. What are Potential Benefits and Challenges of a Humanitarian Licensing Framework for Adaptation and Recovery?

2.2.1. A carefully structured humanitarian licensing framework targeting climate-vulnerable regions could help scale up and accelerate the deployment of critical technologies related to adaptation and recovery. By providing low-cost access to essential patents—on terms tailored to emergencies and low-resource contexts—such arrangements could have far-reaching implications for the cost, scale and speed of climate resilience measures.

2.2.2. One of the most direct benefits is reducing licensing fees and bureaucratic delays for organizations on the front lines of climate disasters, potentially translating into saved lives and protected livelihoods. Adaptation solutions often hinge on multiple patented components, from drought-tolerant seeds that incorporate multiple gene-editing tools to water-purification devices combining proprietary membrane filters and purification additives. Humanitarian licenses bypass the burdens of negotiating each patent individually, lowering both transaction costs and the risk of outright refusals. Lessons from the global health sector illustrate how simplified, subsidized licenses have led to dramatic cost savings for essential medicines[11]. While adaptation technologies differ from pharmaceuticals, a similar approach could lower implementation barriers and accelerate solutions for governments and communities hamstrung by budget constraints.

2.2.3. Timely access is vital for adaptation technologies needed to build resilience against ongoing climate shifts (e.g., faster deployment of drought-resistant crop varieties to smallholder farmers facing changing rainfall patterns) and for recovery technologies required in the immediate aftermath of climate change related disasters (e.g., rapid provision of patented water purification systems or emergency shelter designs). The prolonged process of negotiating conventional patent licensing terms put climate-vulnerable

[11] Medicines Patent Pool. (2021). Annual Report: Expanding Access Through Voluntary Licensing. Retrieved from https://medicinespatentpool.org/

communities at greater risk from extreme weather events. Humanitarian licensing frameworks can be pre-negotiated, much like ex ante agreements for pandemic response, to ensure that when floods, droughts or cyclones strike, local actors are legally and financially free to implement rapid solutions. In the climate context—where each season of delayed action can exacerbate losses—this streamlined, "off-the-shelf" licensing model could improve outcomes.

2.2.4. Beyond cost relief and faster deployment of solutions for end-users, humanitarian licensing may also deliver reputational and strategic gains for IP holders, even if revenue is minimal or waived for designated regions. Patent owners who extend humanitarian licenses may still reserve commercial rights for high-income markets, maintaining a robust revenue stream there. A "market segmentation" approach recognizes that many of the poorest nations—where climate impacts are most acute—would never be profitable markets at full price. By offering subsidized or no-cost licenses under humanitarian conditions, corporations and research entities demonstrate social responsibility, garner public goodwill and sometimes gain early footholds in markets that could become profitable as local economies develop.[12]

2.2.5. A humanitarian licensing system could also reduce legal uncertainties over patent infringement by clarifying permissible uses for adaptation projects[13] within specifically defined humanitarian contexts or pre-agreed vulnerable situations. This is particularly beneficial for small and medium-sized enterprises in developing countries that could not afford protracted IP litigation when operating under these special conditions. By explicitly preempting patent conflicts for uses falling under the defined humanitarian scope, humanitarian licenses lower the risk premium for local entrepreneurs who want to distribute, manufacture or customize life-saving technologies. It may also reduce obstacles for investment in essential infrastructure and early-warning systems, as investors typically want confidence that patents will not trigger unexpected lawsuits or royalty obligations.

[12] Krattiger, A., et al. (2007). Intellectual Property Management in Health and Agricultural Innovation: A Handbook of Best Practices. MIHR/PIPRA.
[13] WIPO. (2022). WIPO GREEN – The Marketplace for Sustainable Technology. https://www.wipo.int/green/

2.2.6. Beyond that, humanitarian licensing can be a powerful tool to encourage local manufacturing and R&D, increasing regional capacity over time to respond to humanitarian crises. Effective climate adaptation is highly context-sensitive; solutions must be tailored to specific local environmental, social and economic conditions rather than being imported wholesale. Humanitarian licensing is explicitly designed to address market failures or acute vulnerabilities in specific, defined circumstances. Strengthening local capacity is intrinsic not just for production, but for selecting, implementing, maintaining and adapting technologies into solutions that are appropriate for their specific, identified vulnerabilities. When licensing terms include technology-transfer components—such as training, know-how sharing or joint pilot programs—local companies and applied research institutes gain the ability to refine and improve upon original innovations based on local realities. This increases the absorptive capacity of regions and enables them to shift from passive recipients to active co-creators of adaptation solutions suited to their circumstances, promoting a broader culture of context-appropriate, climate-oriented invention and resilience. Evidence from small-scale technology-sharing deals in agriculture shows that granting royalty-free use for smallholder farmers can expand local seed production and strengthen local supply chains, leading to cost reductions through economies of scale.[14]

2.2.7. If the framework's terms are open to participants beyond BRICS, humanitarian licensing could also become a driver of South-South cooperation, multiplying its benefits beyond BRICS. Countries prone to similar climate hazards can share proven solutions at little to no cost, strengthening collective resilience. In turn, a broad user base can supply valuable feedback and new field data that circle back to the patent holders, improving future iterations of the technology. Direct sharing of innovations generated within BRICS could offer solutions more suitable to developing countries than those typically originating from the Global North, decreasing dependency on developed nations. Successfully implemented, a South-South humanitarian licensing framework would present an alternative for technology governance that upholds equity, climate justice and support for vulnerable populations.

[14] AATF. (2018). Water Efficient Maize for Africa (WEMA): Project Overview Report. Retrieved from https://www.aatf-africa.org/

2.2.8. A feasibility challenge for humanitarian licensing frameworks is defining 'humanitarian use' clearly and consistently across the national and sub-national contexts. Applying the principle of market segmentation within BRICS presents complexities. Climate vulnerability is geographically specific and cuts across national boundaries and income levels within the BRICS group. A drought-prone region in a relatively wealthy BRICS country might have a humanitarian need for an adaptation technology that is commercially viable elsewhere in the same country or in another BRICS nation. A more nuanced approach is needed to define the "humanitarian market" within BRICS, potentially based on sub-national vulnerability assessments, specific project contexts or disaster declarations, rather than solely on country-level classifications. A balanced approach requires transparent, multi-stakeholder negotiations that clarify the humanitarian scope—often limiting free use to specific user groups or geographies—and preserve commercial opportunities in higher-income settings[15].

2.2.9. The effectiveness of humanitarian licensing mechanisms is highly dependent on the nature of the technology being licensed. Climate adaptation and recovery technologies represent a broad and diverse category, encompassing hardware (e.g., efficient irrigation systems, climate-resilient building materials), software (e.g., early warning systems, climate modeling tools), biological materials (e.g., drought-resistant seeds), data (e.g., climate risk information) and complex processes (e.g., water management techniques). A simple patent license will often be inadequate for effective climate technology transfer. Access to associated know-how, trade secrets, training, data and ongoing technical support might be equally or even more important. As a consequence, humanitarian licensing agreements for CrTs within BRICS may need to be more complex, potentially involving hybrid licenses covering multiple forms of IP and incorporating detailed provisions for technology transfer, capacity building and technical assistance, extending beyond the traditional focus on patent rights. Linking such agreements to existing BRICS Science, Technology, and Innovation (STI) cooperation frameworks and the burgeoning network of BRICS Technology Transfer Centers (TTCs) could create synergies. The TTCs could play a role in identifying relevant technologies, facilitating negotiations, supporting local adaptation efforts and disseminating information about available

[15] Gates Foundation. (2020). Global Access Strategy: Ensuring Equitable Access to Innovations. Retrieved from https://www.gatesfoundation.org/

technologies within the network. Technologies made accessible through that mechanism could also become inputs for joint BRICS R&D projects focused on climate solutions.

2.2.10. When designing a humanitarian licensing framework, effort should be made to prevent the possibility of IP owners only contributing older or non-essential patents, while withholding newer, high-impact technologies. If the licensed portfolio does not meet actual field needs—say, communities need a drought-tolerant crop but only get a patent for a dated irrigation gadget—the program risks irrelevance. Incentivizing participation from IP holders—including universities, private firms, and state-owned enterprises—is critical. Concerns about IP risks need to be addressed through robust administrative and dispute resolution mechanisms capable of monitoring adherence to license terms (pricing, territory, reporting) and pursuing action against non-compliance. Similarly, engaging IP holders may require tangible incentives beyond altruism, such as preferential funding access or regulatory benefits, to offset lost revenue and administrative burdens. On the other hand, the framework should have solid criteria for patent selection, ideally via consultation with local governments, NGOs and climate experts, ensuring they are genuinely needed.

2.2.11. Even when licenses are granted for non-commercial adaptation projects, competition authorities in multiple countries may scrutinize collaborative IP arrangements for hidden anticompetitive effects. To mitigate this, humanitarian licensing should maintain an open-access ethos—any qualified entity can apply, with transparent terms—and should limit participation restrictions to those required to safeguard the IP holder's legitimate commercial markets, not stifling market competitors.

2.2.12. As with patent pools, divergent national IP frameworks could constitute a challenge for humanitarian licensing frameworks. Climate-relevant patents may not be in force in every jurisdiction, or they could be subject to overlapping national laws on compulsory licensing or technology transfer. A thorough mapping of each technology's legal status across participating countries is vital to preventing confusion about the coverage or enforceability of a given humanitarian license. Given the impracticality of full legal harmonization, a humanitarian licensing system would likely need to function as a voluntary, contractual framework operating within existing

national laws and TRIPS flexibilities, respecting sovereignty while fostering cooperation.

2.2.13. Ultimately, a humanitarian licensing approach aligns with broader efforts to ensure that lifesaving and livelihood-preserving technologies are not locked behind prohibitive IP paywalls. Success depends on ensuring genuine alignment between the shared-interest mission of climate adaptation and the diverse motivations of patent owners. If properly managed and monitored, this approach can help fast-track solutions to communities at greatest risk and support loss and damage recovery in a manner that remains both equitable and sustainable.

2.3. Case Study

- **Golden Rice:** Golden Rice is a variety of rice developed to combat vitamin A deficiency. At first, uptake lagged among producers, partly because licensing of the relevant biotechnologies was encumbered by around 70 patents, many of them overlapping. In response, patent holders—including public universities and private firms—chose to grant royalty-free licenses for humanitarian use in countries facing challenges related to poverty. The primary stipulation was that low-resource farmers could grow and consume Golden Rice without paying fees, while patent owners retained commercial rights for high-income markets.[16] The success of its well-coordinated approach to intellectual property—combining philanthropic goals and clear IP segmentation— led to it being replicated in other Product Development Partnerships in agriculture (e.g., vitamin A-enriched bananas).

2.4. How Could a Humanitarian Licensing Framework for Adaptation and Recovery Be Organized and Operated?

2.4.1. A humanitarian licensing framework tailored to climate adaptation and recovery would require coordination among governments, patent owners and potential licensers and implementers, such as NGOs and public agencies.

[16] Golden Rice Humanitarian Board. (2020). Golden Rice Project Overview. Retrieved from http://www.goldenrice.org/

2.4.2. As in the case of patent pools, the first step is to engage relevant stakeholders across the BRICS ecosystem—including government ministries, BRICS institutions like the NDB and STI bodies, national IP offices, research institutions, the private sector, NGOs, and potentially affected communities—to assess technology needs, build consensus and define strategic priorities. In this effort, Technology Needs Assessments reports[17], produced within the scope of the UNFCCC by so far almost 100 developing countries, could serve as a valuable input .This process would also help spotlight high-demand technology areas for climate resilience and emergency recovery, such as drought-tolerant seeds, desalination devices or early-warning software.

2.4.3. A working group could then be formed to conduct a targeted feasibility study on specific high-priority sectors (e.g., water management, climate-resilient agriculture). These studies should map relevant technologies and their IP landscapes within BRICS; analyze legal and policy frameworks in member states, assessing how humanitarian licenses could be recognized or enforced in diverse legal contexts; and identify specific barriers and opportunities for implementation. This scoping phase should define criteria for technology inclusion, focusing on climate relevance, pertinence for humanitarian vulnerabilities and potential for local uptake, customization and improvement.

2.4.4. Based on feasibility findings, BRICS governments could collaborate on a charter establishing the humanitarian licensing mechanism and clarifying, among others, its objectives (supporting climate adaptation and recovery in vulnerable regions); governance model (possibly a steering committee assisted by a board representing stakeholders); and participation rules.

2.4.5. Clear guidelines should then be drafted, considering the need to manage the inherent trade-offs in defining the scope of 'humanitarian use' and balancing access goals with IP holder concerns. Procedures should be established for identifying and evaluating technologies, facilitating negotiations between IP holders and licensees and developing flexible licensing terms. Templates based on core humanitarian licensing principles (e.g., scope limitations, royalty adjustments, affordability clauses, reserved

[17] https://unfccc.int/ttclear/tna

rights) should be created, but applied flexibly based on the technology, licensee, specific use case and IP source. The guidelines should also set a process for resolving disputes and evaluating project proposals that seek to use the licensed IP.

2.4.6. A phased launch strategy, starting with pilot projects focused on specific technologies (e.g., publicly funded research outputs, loss and damage recovery tools), could be a pragmatic approach. This allows for testing models, building trust, and addressing challenges incrementally before potential scaling. Promoting the initiative and facilitating matchmaking between IP holders and potential users would be key. Involving international organizations like WIPO or the Climate Technology Centre & Network (CTCN) can provide technical support, help coordinate with existing platforms (e.g., WIPO GREEN) and ensure global best practices in licensing are followed.

2.4.7. Resource requirements must be assessed, covering operational costs and costs for providing incentives for patent owners, as well as necessary funding for capacity building to help communities absorb and improve on the technologies that will be made available. Funding strategies could combine voluntary member contributions and philanthropic grants approved by the framework's governance.

2.4.8. Day-to-day tasks would include cataloging new patent contributions, approving license requests, administering any royalty models and monitoring adherence to humanitarian-use conditions (e.g., ensuring that licensees do not export subsidized products to wealthier markets for profit). Regular reporting—on the number of licenses granted, the geographies served, and the estimated impacts—would build credibility and demonstrate the initiative's results to donors, governments and patent holders.

2.5. Conclusion

2.5.1. Evidence shows that humanitarian licensing offers significant potential for accelerating access to vital climate adaptation and recovery technologies, enhancing affordability, fostering South-South cooperation and leveraging collective innovation capabilities. If implemented carefully, it could make a substantial contribution to BRICS' climate resilience, aligning with the group's ethical credential.

2.5.2. Key questions to guide BRICS policymakers in determining the initiative's feasibility and design include:

- Whether ‘humanitarian use’ can be consistently defined across jurisdictions, and compliance credibly monitored and enforced;
- Whether potential benefits from accelerated technology access justify the operational costs and complexities involved;
- Whether capacity-building measures across BRICS countries can realistically support effective implementation;
- Whether adequate incentives (financial, regulatory, reputational) can be designed to secure voluntary participation from diverse IP holders; and
- Whether funding can be secured for long-term operations, incentives and capacity building.

2.5.3. Similarly to other studies under this Report, there is need to assess alignment between climate change related patent availability and demand, interoperability of BRICS national IP frameworks and the framework´s economic viability.

3. OPEN LICENSING SYSTEM FOR CLIMATE CHANGE RELATED PATENTS

3.1. What Is an Open Licensing System for Climate Change Related Patents?

3.1.1. An open licensing system is a voluntary arrangement in which patent holders—such as universities, companies and state-owned research institutes—offer their innovations under standardized, non-exclusive, often royalties-free terms to any interested party. By publishing a formal open license declaration, IP rights holders grant predetermined permissions for others to access, use, adapt and redistribute the technology. It significantly reduces the complexity of negotiating individual agreements[18].

3.1.2. Open licensing operates through various models that define different degrees of openness regarding patent use permissions. At one end of this spectrum are highly permissive, royalty-free licenses granting extensive rights for broad usage. Other models include conditional arrangements, such as patent pledges—where non-enforcement of rights depends on the user meeting specific conditions or behaviors—and fee-based, non-exclusive licensing systems in which licensing terms and fees are pre-determined. The common thread is a shift away from strict exclusive control towards broader, often standardized, terms of access, reducing transaction barriers.

3.1.3. An open licensing system for climate change related patents would aim to accelerate the deployment of essential CrTs within BRICS, potentially using models where patent holders publicly declare their willingness to license under pre-determined conditions and fees. While distinct from patent pools (which focus on aggregating complementary patents for efficient commercial licensing), open licensing shares the goal of facilitating technology access. A 2022 analysis[19]underscored the positive climate potential of open technologies "publicly available for modification and redistribution" in applications ranging from "open hardware such as wind

[18] World Intellectual Property Organization. (2021). Licenses of Right and Open Licensing: A Global Overview. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_xxxx.pdf

[19] OpenSustain.tech Team. (2023, April 4). Impact and potential of open source on climate technology. https://opensustain.tech/blog/impact_and_potential_of_open_source_on_climate_technology/

turbines and solar panels to open data and software packages". If successfully implemented, such a system could boost technology diffusion and local innovation among BRICS members.

3.2. What are Potential Benefits and Challenges of an Open Licensing System for Climate Change Related Patents?

3.2.1. A well-designed open licensing system for climate change related patents could simplify access to CrTs within BRICS. One of its immediate benefits is eliminating the need for case-by-case negotiations that often hinder technology transfer. Given that, as noted in previous studies under this Report, CrTs are frequently covered by multiple patents, there exists clear practical value in offering centralized, standardized licensing terms. An open licensing system may adopt a registry (such as a web portal) serving as a single, transparent avenue for discovering available patents and the terms for acquiring their usage rights. For SMEs, which often lack the resources to negotiate IP deals, this would provide a "one-click" route to obtain CrTs, catalyzing their ability to manufacture or implement climate solutions locally. Competition within the open platform could also lead to lower license fees, making CrTs more affordable and accessible.

3.2.2. An open licensing system across BRICS members could unlock dormant value, enabling more efficient development and wider deployment of technologies. By pooling CrT patents under accessible terms, countries could reduce duplicative R&D and save costs for enterprises seeking climate solutions. Instead of each firm reinventing similar technologies or paying higher fees to foreign IP holders, companies could license proven technologies from peers at often lower costs. Openness can also foster collaborative research and development efforts among BRICS institutions. Enhanced access to foundational and general purpose technologies can empower local researchers and firms to adapt these technologies to specific domestic needs and contexts. Because open licenses often permit derivatives and improvements, they encourage follow-on, decentralized innovation, building upon the licensed technologies to create new products, services and solutions tailored to local conditions. By making patents widely available on non-exclusive terms, the system also encourages multiple actors to implement innovations in parallel across different regions, delivering cross-system sustainability goals. Academic research underscores that improving

access to licensing can generate "learning-by-doing" effects and enable knowledge spillovers[20]. This "many hands" approach can lead to faster and broader emissions reductions and improved climate resilience.

3.2.3. By making IP more freely available, an opening licensing system would shift competitive advantage between local companies toward execution capabilities – who can manufacture at quality, who can offer maintenance, who can innovate on top— which tends to lower entry barriers and benefit SMEs. Having a common pool of technologies can enable interoperability and production standardization, which grows markets: a Linux Foundation report[21] on power grid software found that open collaboration based on common standards enabled utilities to modernize and become more affordable, as the cross-pollination of ideas often leads to unexpected breakthroughs. Moreover, by preempting overlapping claims through publicly declared, non-exclusive terms, open licensing can lower legal uncertainties that often deter smaller and medium-sized firms from venturing into emerging technology fields. As mentioned in previous studies under this Report, a lower risk of infringement lawsuits also tends to encourage investments and reduce financing costs.

3.2.4. As with other IP arrangements, an open licensing system would be a venue for South-South cooperation, facilitating direct knowledge and technology sharing among member states. Broadening participation beyond the founding countries could amplify the system's benefits for global climate action and, given the larger pool of prospective adopters, attract additional revenue streams for BRICS-based patent owners, fueling R&D. It would also send a strong political signal of collective leadership, potentially rallying other developing nations to adopt similar open licensing approaches and expand the overall ecosystem of accessible CrTs. Additionally, if the system focuses on open-source technologies, these offer transparency, allowing independent assessment of their safety and efficacy, which increases public trust. As noted by a climate technology open-source group, openness

[20] Makeeva, E., Popov, K., & Teplova, O. (2024). Patenting for profitability: Green energy innovations and firm performance in BRICS countries. Frontiers in Environmental Science, 12, Article 1332792. https://doi.org/10.3389/fenvs.2024.1332792

[21] Goodman, S. (2022). Paving the way to battle climate change: How two utilities embraced open source to speed modernization of the electric grid. Linux Foundation. https://doi.org/10.70828/ZXCH7776

"ensures transparency and keeps governments and actors accountable to their climate pledges"[22].

3.2.5. A central concern is the potential impact of open licensing on private sector incentives to invest in R&D if broad, low-cost, or royalty-free licensing diminishes their perceived ability to recoup investments through exclusivity. Balancing the goal of maximizing access with the need to sustain private innovation is a fundamental trade-off for this approach. It is also important to address concerns that open licensing will allow competitors or other countries to free ride on one's investments. Open licensing systems could consider providing incentives for participating patentees, such as reductions in annual patent renewal fees during the open-licensing period or expedited administrative processing. These measures reward patent owners for contributing to the public good of climate technology diffusion and help offset any perceived loss of exclusivity. Safeguards should also be set to protect all parties. Patent owners could be given the right to withdraw their open license declaration if business circumstances change. On the other hand, any licenses already granted before withdrawal should remain valid, so existing licensees retain their usage rights under the original terms.

3.2.6. Lack of formal liability and quality control can be a barrier for the functioning of an open licensing system. Questions regarding accountability (for example: if an open design flood barrier fails, who bears responsibility?) highlight the importance of clearly defined liability provisions. With open technologies, users must possess adequate capabilities to verify and maintain derived utilities. Additionally, lack of consistent reinvestment and updates may lead open technologies to become obsolete. To mitigate this possibility, an open licensing framework should have appropriate funding and collaborative provisions. Another risk lies in the possibility that openly shared technologies might be misappropriated in ways that counter developers' original intent or incorporated into larger IP proprietary system and "closed" it in practice. Specific provisions may be introduced into licensing terms to prevent this, such as requirements to share improvements openly.

[22] Malliaraki, E., & Augspurger, T. (2022, January 17). Impact and potential of open source on climate technology. Open Sustainable Technology. https://opensustain.tech/blog/impact_and_potential_of_open_source_on_climate_technology/

3.2.7. Aligning the "supply" of openly licensed patents with the actual "demand" or needs within BRICS is also critical to avoid the system becoming a repository for low-value IP. Finally, as with other arrangements studied under this Report, attention should be given to differences between national IP legal frameworks, as well as to the need for consistency with national anticompetition laws.

3.2.8. Overall, an open licensing system presents a compelling model distinct from patent pools, emphasizing broad access and follow-on innovation. Its potential aligns well with BRICS' climate and development priorities. However, realizing these benefits hinges on careful design choices that balance the inherent tension between access and innovation incentives, address legal and institutional diversity and ensures support for management and improvement of pledged technologies.

3.3. Case Study

- **Low Carbon Patent Pledge (LCPP):** Launched on 2021 by a group of major technology and energy firms, it centers on voluntary open licensing of climate change related patents. Patent holders agree to make selected low-carbon technology patents available for free to anyone developing or implementing solutions that reduce greenhouse gas emissions. By mid-2022, the LCPP listed hundreds of patents covering energy storage, smart manufacturing processes and efficient data center cooling systems, among others. While the LCPP is relatively young, supporters highlight its dual impact: enabling innovators worldwide to incorporate cutting-edge designs into climate solutions at no cost and allowing patent holders to demonstrate tangible corporate commitment to environmental goals.
- **Tesla's Patent Pledge Initiative**: Announced by Tesla in 2014, the initiative takes the form of a public, irrevocable pledge not to sue any party for infringing "Tesla Patents" through activities related to electrical vehicles or associated equipment, provided users are "acting in good faith". Its terms are explicitly formulated as forbearance of enforcement, not a waiver of patent claims (including for past infringement) or an authorization to practice the patents. A key provision requires that if Tesla transfers a pledged patent, the recipient must make a similar public pledge binding itself and subsequent

transferees. The initiative may have indirectly accelerated innovation: one study found that patents pledged by Tesla saw a boost in citations by other inventors, suggesting knowledge spillover and inspiration to others following the announcement[23].

3.4. How Could an Open Licensing System for Climate Change Related Patents be Organized and Operated?

3.4.1. As with other IP frameworks analyzed in this Report, creating a BRICS open licensing system would begin with consultations involving key stakeholders, including patent owners and potential users, to determine interest levels and identify priority CrT areas. Subsequently, a feasibility study should be conducted, involving patent landscape assessments and a detailed analysis of differing national IP frameworks. This would provide inform collective decision-making regarding system design.

3.4.2. If feasibility results are positive, participating BRICS countries could jointly develop a charter outlining the system's goals and governance structure, as well as common guidelines to ensure consistency across jurisdictions, including comparable application processes, mutual license recognition, incentives for patent holders and eligibility criteria. Participation by patent owners would remain voluntary. Coverage (specific CrT areas to be included) could be set based on BRICS climate priorities and drawing upon relevant national submissions to the UNFCCC, such as Technology Needs Assessments and Nationally Determined Contributions. The system should implement a robust vetting process to ensure that patents listed are high quality and relevant to the system´s coverage.

3.4.3. A robust, user-friendly online platform is intrinsic to the system´s viability. This platform should serve as a central registry or database listing available patents, detailing the applicable open license terms, facilitating licensee registration or notification and potentially offering search functions to match user needs with available technologies. Advanced features could include tools for monitoring license usage and impact. Transparency should be prioritized through clearly documented licensing terms, fees and usage conditions. The technical infrastructure could be hosted by one of the BRICS

[23] De Rassenfosse, G., & Palangkaraya, A. (2023). Do patent pledges accelerate innovation? Research Policy, 52(5), Article 104745. https://doi.org/10.1016/j.respol.2023.104745

member countries on a voluntary basis or by an appropriate international organization.

3.4.4. Each open license declaration would specify standardized licensing terms—covering scope, duration, usage rights—and disclose any applicable royalties or fees upfront. Achieving the right balance between flexibility (to attract diverse, valuable patents) and standardization (for user clarity and predictability) will be a key design challenge. Although licensing terms and fees could vary according to market value and technology usage, their details should be clearly and consistently presented in the registry. A common taxonomy of licensing conditions, leaving flexibilities for unique cases, would improve users' ability to understand and compare terms across different patents. To reduce legal risks, all licenses could be granted on a non-exclusive basis, with patent holders retaining full ownership.

3.4.5. Rather than creating a new centralized authority, each country could designate an appropriate national facilitator to administer open licenses domestically, as well as to submit them to the shared online registry. Each nation would retain full control over patent governance within its own jurisdiction, but mutual recognition of the open-license declarations and the integrated registry would allow the system to function as a cross-border initiative. An intergovernmental working group could coordinate the development and maintenance of the registry and facilitate regular sharing of information and lessons learned among participating entities. It could also serve as a venue for BRICS members to offer capacity building programs, on a voluntary basis and as needed, to fill gaps in the ability to handle this model and enforce its conditions nationally. This group would also be responsible for maintaining the shared online registry, reviewing the system´s outcomes (licensing rate, user satisfaction, projected climate outcomes) and recommending improvements. As the technology and policy landscape evolves, it could also suggest adjustments to the system´s patent coverage and licensing conditions taxonomy.

3.4.6. Incentives could include fee waivers (e.g. for patent renewals), streamlined IP procedures, reputational public awards, enhanced access to funding (R&D grants for open technology development), tax rebates for open licensing revenue and preferential procurement rules. While flexibility should be afforded for each country to choose incentives that match national

laws and preferences, a degree of proportionality should be kept, to avoid widening disparities of pledging activity between countries.

3.4.7. An effective dispute resolution mechanism would be essential to the system's credibility and functionality. Participating countries could agree on common principles for resolving disputes. While the intergovernmental working group could serve as a venue for exchanging information and coordinating procedures related to dispute resolution, enforcing could be managed by relevant national authorities in accordance with their respective legal frameworks. Limiting pledging eligibility to patents registered in all covered jurisdictions would ensure their protection under national IP laws, but also increase costs and possibly discourage patent holders to use the system.

3.4.8. Initial setup costs would include developing the registry platform, establishing secure data management protocols and funding the initial feasibility studies. Regular operational costs could encompass platform hosting and maintenance, technical support, translation services, registry updates and the administrative overhead for both national facilitators and authorities managing domestic processes and the intergovernmental working group coordinating the overall framework. Funding sources might involve contributions from member states and administrative fees for using the platform, carefully balanced to avoid deterring participation.

3.4.9. The daily operations of the system would require close coordination among the registry platform, national patent offices and the intergovernmental working group. Routine tasks would include processing open license declarations, ensuring registry data integrity, updating patent statuses (e.g., expiry, withdrawal of declaration), ensuring accurate contact information (registry lifecycle management), addressing inquiries from licensors and licensees, generating regular activity reports and potentially providing first-level support or routing for dispute mediation requests. Effective digital communication protocols and streamlined workflows between the central registry and national patent offices would ensure smooth, reliable operations.

3.5. Conclusion

3.5.1. Experience suggests that open licensing can substantially reduce negotiation complexities, expedite the uptake of critical innovations and still offer reasonable returns to patent owners.

3.5.2. Key points for assessing the viability of an open licensing system for climate-related technologies include the following:

- Whether patent holders perceive sufficient benefits—such as wider market penetration, reputational gains or incentives offered by national governments—to voluntarily place their inventions under standardized non-exclusive terms.
- Whether relevant national authorities of participating countries possess adequate capabilities to manage their responsibilities under the system.
- Whether the system can balance the broad permission for downstream modifications or derivatives (a hallmark of open licensing) with license provisions that prevent misappropriation or re-closure of openly shared technology.

3.5.3. Similarly to other studies under this Report, there is need to assess alignment between climate change related patent availability and demand, interoperability of BRICS national IP frameworks and the system´s economic viability.

CHARTING A COLLABORATIVE PATH FOR CLIMATE TECHNOLOGY THROUGH INTELLECTUAL PROPERTY

This report has explored IP options to bolster climate change-related technology cooperation among BRICS nations and with the wider international community.

The comparative analysis of all three options provides overarching insights into how intellectual property, as a system, can serve as an enabling infrastructure for cooperation on CrTs. The studies underscore that well-structured IP rights can provide reliable market signals that draw private investment towards high-impact mitigation and adaptation R&D. The flexibility of IP licensing—evidenced across the options assessed—may be explored by arrangements that tailor or tier exclusivity rights to suit differing technology maturities, market structures and public-interest objectives, keeping innovators engaged while broadening access. The disclosure and legal clarity built into formal IP regimes creates a shared technical language that reduces information asymmetries, builds transnational trust and underpins more efficient cross-border collaboration. Collectively, these findings highlight that IP, when deliberately aligned with climate goals, can help bridge the gap between invention and equitable diffusion of CrTs and provide a scalable basis for cooperation.

Across the three options studied, a set of recurring strengths stands out. Each option replaces one-off, bilateral licensing with standardized, transparent terms, reducing transaction costs, negotiation cycles and legal burdens and accelerating the uptake and deployment of CrTs. On the supply side, inventors benefit from new channels to earn royalties, gain reputational credit and reach new markets, which incentivizes further research and development. By pulling many prospective licensees into the same scheme, they create a larger, more predictable market for suppliers. All three options can foster environments conducive to local innovation, enabling the adaptation and improvement of technologies to suit specific national and regional contexts. They also provide opportunities for enhancing South-South and North-South cooperation by facilitating direct knowledge and technology sharing.

However, the successful implementation of any of these IP options also hinges on addressing common challenges. A critical consideration for all models is ensuring genuine alignment between the supply of IP and the actual technological needs and demands within BRICS countries. The diversity in national IP legal frameworks among BRICS jurisdictions, including patentability criteria and enforcement mechanisms, as well as in anti-competition laws requires careful mapping efforts to ensure the feasibility and effectiveness of shared licensing structures. The economic viability and long-term sustainability of these initiatives, including addressing operational costs and funding, also demand assessment.

It is important to recognize the complementarity of the assessed IP options. A patent pool might be highly effective for commercially viable mitigation technologies, a humanitarian licensing framework could ensure access to critical adaptation and recovery solutions in vulnerable contexts, and an open licensing system could spur widespread innovation and access to foundational or publicly funded CrTs. They also balance incentives: pools generate royalties, humanitarian licenses deliver reputational gains and open licenses expand user bases for follow-on innovation. Implemented thoughtfully, perhaps even in conjunction, these options could create a multifaceted and more resilient ecosystem for technology cooperation that delivers broader reach, faster roll-out and sustained R&D, yielding synergistic benefits that surpass what any single approach could achieve alone.

Although the report references only patents, as a key intellectual property tool, it is important to note that other forms of intellectual property can also be linked to products or processes in climate-related technology. These may be crucial during technology implementation and require licensing, indicating that the scope of IP options could be expanded to encompass an Intellectual Property-Driven Technology Exchange among member countries, offering a more holistic and powerful approach to fostering innovation and enabling widespread adoption of crucial climate solutions.

Offered on a non-binding, non-prejudicial, non-prescriptive and non-exhaustive basis, this report aims to inform any future work and debate among BRICS members on IP options. Continued engagement, on-the-

ground research and experimentation are needed to refine these concepts and to identify viable, impactful and equitable arrangements that leverage intellectual property as a tool for enhancing climate change-related technology cooperation, in hopes of accelerating our collective transition towards a better future.