

Task Force 02

SUSTAINABLE CLIMATE ACTION AND INCLUSIVE JUST ENERGY TRANSITIONS

Advancing Affordable Access to Climate Technologies for Clean Transition and Sustainable Industrialization in Developing Countries

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Abstract

The clean transition towards the achievement of net zero is often constrained by inadequate finance and access to affordable climate technologies. While the G20 has been at the forefront of efforts to address the financial challenges, the generation and diffusion of climate technologies must also receive due attention.

Climate technologies include those related to generating renewable energy, carbon capture and storage, low carbon alternatives to traditional products, and energy efficiency, among others. In the past, today's high-income countries deployed industrial policies, including flexible intellectual property rules, to help support structural transformations. Many of those policies have since been sanctioned in multilateral trade fora. Nevertheless, these tools are essential for sustainable industrialization in a climate crisis and even high-income countries have begun to use them.

This policy brief explores the literature of the relationship between intellectual property protection and innovation to understand how to foster the supply and diffusion of clean technologies for sustainable industrialization. The G20 leaders under the Brazilian Presidency can advance global consensus-building and action toward aligning global rules with recent research findings, leading national efforts to maximize existing policy flexibilities and supporting the development of new research to support policy making in the future.

Keywords: Intellectual property, Climate Technology, Technology Transfer, TRIPS Agreement, G20

Diagnosis of an Issue: Access To Climate Technology

In December 2023, 198 member states to the United Nations Framework Convention on Climate Change (UNFCCC) reaffirmed their commitment to transition “away from fossil fuels in energy systems in a just, orderly and equitable manner”.¹ This task will require the active participation of all the world’s countries.

The global economy is experiencing a fourth industrial revolution, a digital revolution, driven by artificial intelligence (AI), 3-D printing and related tools. In parallel, the global economy must move toward decarbonization through low-carbon technology (LCT), to address the challenge of the climate crisis. Success will depend, in part, “on the cost, performance and availability of technologies that mitigate and help countries adapt to our changing climate”.² Developing countries, even more dependent on the availability of diverse new technologies to mitigate and adapt to climate change, will require major economic restructuring on a trajectory that diverges significantly from today’s high-income countries.³

The need for new technologies to combat climate change, and developing countries’ needs to receive transfers of that technology on favourable terms, has been anticipated

¹UNFCCC, “UNFCCC Conference of First Global Stocktake.”

²Cheng, “Intellectual Property and International Clean Technology Diffusion.”

³Pigato et al., *Technology Transfer and Innovation for Low-Carbon Development*; Probst et al., “Global Trends in the Invention and Diffusion of Climate Change Mitigation Technologies”; Touboul et al., “Invention and Global Diffusion of Technologies for Climate Change Adaptation.”

from the earliest moments of the climate change discourse.⁴ Every climate treaty since the Rio Declaration has included commitments by industrialized countries to transfer the necessary technology to countries in need.⁵ Moreover, the Intergovernmental Panel on Climate Change (IPCC) consistently points to the lack of sufficient technology as a constraint on climate action for developing countries.⁶

Although new climate technologies are being developed at a rapid pace, diffusion of those technologies is happening much more slowly.⁷ The majority of low- and middle-income countries (LMICs) lack access to the technology necessary to meet their climate mitigation and adaptation goals.⁸ The remainder of this brief explores whether global intellectual property (IP) rules, as implemented by national governments, are a major contributor to LMICs' constrained access to climate technology.


⁴UNCED, "Rio Declaration on Environment and Development," art. Principle 9.

⁵United Nations, "United Nations Framework Convention on Climate Change," art. 4.1-4.8; United Nations, "Paris Agreement," art. 6.8, 10.1.

⁶IPCC, "Special Report: Global Warming of 1.5C"; IPCC, "Climate Change 2022: Impacts, Adaptation and Vulnerability"; IPCC, "AR6 Synthesis Report."

⁷IEA, "Net Zero Roadmap: A Global Pathway to Keep the 1.5C Goal in Reach: 2023 Update."

⁸Pigato et al., *Technology Transfer and Innovation for Low-Carbon Development*; Probst et al., "Global Trends in the Invention and Diffusion of Climate Change Mitigation Technologies"; Touboul et al., "Invention and Global Diffusion of Technologies for Climate Change Adaptation."



G20 countries like India and South Africa, also members of WTO, have been at the forefront of calls for WTO reform that would give LMICs the flexibility to leverage IP standards to increase access to medicines. The WTO, as a consensus-based multilateral institution, has struggled to respond to the most recent global crisis – the COVID-19 pandemic – in a way that adequately addresses the needs of all of its members. We believe that the G20, as the forum of the world’s leading economies, having put sustainable development at the centre of its agenda, must provide leadership and help to build consensus. Consensus at the G20 will pave the way for consensus at the WTO, which has been a permanent invitee to the G20 Meetings.

In light of the lessons learned over the course of the COVID-19 pandemic, and the urgency of the current climate crisis, the G20 should seek to generate consensus among its members to increase access to climate technology for countries with the most urgent needs.

Recommendations

The technologies needed for mitigation are diverse, from renewable energy inputs like solar cells and windmill components, to energy efficiency improvements in factories, and low carbon alternatives to traditional products and production methods (like green steel and electric vehicles). For adaptation, countries need additional technology – weather forecasting technology, drought and flood resistant agricultural products and climate resilient infrastructure technology, among others. Across technology types, the consistent message of the interdisciplinary academic community is that technology transfer is needed,⁹ that it is required under international treaties,¹⁰ and that it is not sufficiently done.¹¹

Evidence demonstrating the insufficiency of technology transfer comes from a series of empirical studies that explore whether such transfer is correlated with high levels of IP protection. Almost three-quarters of all LCT patents originate in only five countries – the US, Japan, Germany, South Korea and China.¹² The rest gain access to these technologies

⁹Dechezleprêtre, Glachant, and Ménière, “What Drives the International Transfer of Climate Change Mitigation Technologies?”; IEA, “Net Zero Roadmap: A Global Pathway to Keep the 1.5C Goal in Reach: 2023 Update.”

¹⁰United Nations, “Paris Agreement.”

¹¹Athreye et al., “Intellectual Property Rights and the International Transfer of Climate Change Mitigating Technologies”; Touboul et al., “Invention and Global Diffusion of Technologies for Climate Change Adaptation.”

¹²Pigato et al., *Technology Transfer and Innovation for Low-Carbon Development*.

through trade, investment and licensing. Early studies suggested that strong patent protection is correlated with high-technology imports, high-technology foreign investment flows and more and easier licensing of technology.¹³ However, more recent studies have found that the impact of patent protection and IP enforcement varies across countries depending on income levels, types of technologies and industries.¹⁴ The newest studies found that stronger IP laws and enforcement are not positively correlated with transfers of mitigation technologies (measured by foreign-originator patent filings). Instead, in low-income countries, the strength of IP enforcement is actually negatively correlated with such transfer.¹⁵ Moreover, when it comes to adaptation technology, transfer to low-income countries has been negligible at best.¹⁶ The research has thus shown that strong IP protection does not, on its own, lead to greater access to climate-related technology.

¹³Dechezleprêtre, Glachant, and Ménière, “What Drives the International Transfer of Climate Change Mitigation Technologies?”

¹⁴Athreye et al., “Intellectual Property Rights and the International Transfer of Climate Change Mitigating Technologies”; Touboul et al., “Invention and Global Diffusion of Technologies for Climate Change Adaptation.”

¹⁵Athreye et al., “Intellectual Property Rights and the International Transfer of Climate Change Mitigating Technologies.”

¹⁶Pigato et al., *Technology Transfer and Innovation for Low-Carbon Development*; Touboul et al., “Invention and Global Diffusion of Technologies for Climate Change Adaptation.”

Additional literature suggests that strong IP protection, in addition to *not* increasing technology transfer, can actively discourage the same. Although IP laws are theoretically aimed at encouraging innovation in order to increase the likelihood that innovation is diffused for the benefit of the broader public, the impact might be compared with that of a seesaw. According to some, this back-and-forth effect is “inescapable” such that “to the extent that [patent protection] offers protection to a patent holder, it [inherently] slow[s] down the diffusion of inventions”.¹⁷

Countries seek to strike a balance, then, between promoting the innovation itself and supporting the dissemination of relevant technologies. Ideally, the most important and publicly beneficial innovations will be launched and, within a reasonable amount of time, be available to everyone. The difference between a well-functioning and poorly functioning IP system, however, may depend on the comparative advantages of the innovator countries, the domestic institutional characteristics of the non-innovator countries to absorb new technologies, as well as the characteristics of each technology market and supply chain.¹⁸

In the access to medicines context, researchers have demonstrated conclusively that higher levels of IP protection leads to “stronger pharmaceutical monopolies”, which are associated with higher prices for those products.¹⁹ Drawing from lessons in access to

¹⁷Cheng, “Intellectual Property and International Clean Technology Diffusion.”

¹⁸Kim et al., “Appropriate Intellectual Property Protection and Economic Growth in Countries at Different Levels of Development”

¹⁹Tenni et al., “What Is the Impact of Intellectual Property Rules on Access to Medicines?”

medicines research, some experts argue that IP protection likely poses an obstacle to access to LCT through the impacts of monopoly pricing, restricted access to information and more.²⁰

Policy Proposals To Advance Affordable Access To Climate-Related Technologies

In light of the empirical and theoretical evidence presented above, G20 countries have several points of entry by which they may work to advance affordable access to climate-related technologies.

- First, G20 countries should help build consensus toward structuring global IP rules in a way that facilitates climate and development goals.²¹ Specifically, G20 countries can bring to the table the most recent research to demonstrate how global governance institutions can **value global IP rules and national IP protection differently** in light of recent evidence.

- Second, G20 countries should, at a national level, **maximize existing TRIPs flexibilities** to increase access to climate technology, and allow others to do the same. This will allow them to make progress toward increasing access to essential climate-

²⁰Khor, “Climate Change, Technology and Intellectual Property Rights: Context and Recent Negotiations.”

²¹Kumar, “Intellectual Property Rights, Technology and Economic Development | Economic and Political Weekly.”

related technologies and developing those industries simultaneously as they develop a common approach at the multilateral level.

- Third, G20 should **support new data gathering** about patent protected climate-related technologies and draw from lessons learned during the COVID-19 pandemic to increase supply of those technologies. This could include creating climate-related patent pools, and, where possible, increasing public investment and subsidization of new technologies on the condition that those technologies are licensed in LMICs.

Scenarios-Based Outcomes

Proposal #1: Valuing rules differently

Given that the research shows that business-as-usual IP protection is not doing its job of promoting both sufficient innovation and diffusion, G20 countries' national governments should adopt a common approach to IP protection that **values those rules differently**. Once the G20 has built a consensus around these rules, it will be more feasible at the WTO or other institutions to propose additional exceptions or flexibilities within the rules which allow countries to respond to their climate-related technology needs. This may take the form of renewed support for an effort by Ecuador in 2013 begin a discussion about expanding flexibilities present in the TRIPS Agreement when it comes to climate-related technologies.²²

Unsurprisingly, the Ecuadorian proposal met with strong opposition by US, Japan and others. Some have been concerned that substantially removing IP protection for climate-related technologies would actually undermine much-needed innovation. Any renewed proposal must protect against such an outcome. Instead, the goal should be to expand TRIPS flexibilities that allow countries to flexibly respond to the innovation and diffusion needs in a given sector or jurisdiction. Some mechanisms may include new provisions allowing compulsory licensing for climate technology or a peace clause for measures aimed at increasing access to climate technology. Given the experiences during the COVID-19 pandemic, and the development of new research on climate-related

²²Communication from Ecuador, "Contribution of Intellectual Property to Facilitating the Transfer of Environmentally Rational Technologies."

technologies, the G20 may be able to establish a new openness to conversations about expanding IP flexibilities for LMICs.

Proposal #2: Maximizing flexibilities for IP innovation and diffusion

Developing and building a consensus, however, will involve a substantial amount of time and effort. In the meantime, countries already have the ability to define patentability for their own jurisdiction, to articulate conditions and processes for issuing compulsory licenses, allow pre- and post-grant patent opposition, invoke national security conditions for sharing technology and knowledge, and more. G20 governments can **maximize these flexibilities** to increase access to essential climate-related technologies – both for mitigation to help them meet their global climate goals and for urgent adaptation technologies to mitigate climate-related loss and damage.

The other side of that coin, so-to-speak, requires G20 countries to also recognize those flexibilities by backing away from unilateral measures that would deter others from using them. For example, the US has historically called out countries in its Special 301 report for exercising the flexibilities well within their international legal rights.²³ More recently, the US has shifted towards a more accepting approach, recognizing some TRIPS flexibilities by removing references to compulsory licensing in the Report.²⁴ This

²³Asok, “Compulsory Licensing For Public Health And USA’s Special 301 Pressure.”

²⁴USTR, “Special 301 Report.”

approach should continue in parallel with countries maximizing their own use of TRIPS flexibilities.

Proposal #3. Leveraging public support to gather data and promote technology transfer

Much is still unknown about the sector-specific responses to IP protection in climate technology. As newly developed innovations begin to enter the market, countries will need to experiment both in funding mechanisms and policy interventions. Given what we know now, the G20 should **support the creation of a collectively-agreed list of critical climate technologies** that are under patent. This will facilitate transparency and allow government and private researchers alike to assess the role of IP in access to climate-related technology. Following models in the access to medicines context like the Medicines Patent Pool and the Covid-19 Technology Access Pool, the G20 should support the creation of a patent or technology pool which may acquire licensing rights to make them available to developing countries.

In parallel with this, G20 countries should take another page out of the COVID-19 playbook and become major drivers of innovation through national subsidies and public investment, if at all possible. By doing so, G20 countries may be able to **leverage their funder-role** to increase technology transfer in line with Paris Agreement commitments.

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