

Task Force 3: Science and Digitalization for a Better Future



Intellectual Property Rights Regimes, Their Assets, and Limitations

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Abstract

The role of intellectual property has become increasingly important in protecting creations of the mind and making day-to-day business decisions. Hence, if innovations are left unprotected, they can be exploited by competitors with capacity to commercialize them. This policy brief points out that low- and middle-income countries face intellectual property-related challenges compared to high-income countries due to inadequate intellectual property awareness, the high cost of processing patent applications, weak enforcement of intellectual property rights, and weak research and development capacity. Group of Seven (G7) countries are thus better positioned, as high-income countries, to lead

globally on intellectual property enforcement, and leverage the flexibilities within the trade-related aspects of intellectual property to support and encourage future technologies in low- and middle-income countries. We propose that G7 countries support the creation of equity- and rights-based awareness on intellectual property rights, the improvement of mechanisms and systems for enforcement, and investment in research and development via building local support to reduce costs.

Challenge

The world is rapidly changing into a knowledge-based economy, and the production of goods and services is determined by a wide range of innovation (UN 2022). New products, brands, and designs come onto the market due to continual creativity and innovation. If left unprotected, innovations can be exploited or lost to competitors who may have the capacity to scale and commercialize them (Sukarmijan and Sapong 2014). The role of intellectual property has become increasingly important in protecting creations and making day-to-day business decisions. The Agreement on Trade Related Aspects of Intellectual Property (TRIPs) sets the minimum standards for intellectual property regulations for the benefit of authors, inventors, and creators. These include all intellectual property rights (IPRs), comprising patents, copyrights, trademarks, industrial designs, geographical indications, and utility models, among others.

Low- and middle-income countries (LMICs), however, face challenges in utilizing the flexibilities within the TRIPs more favorably than high-income countries (HICs) (Nwauche 2005). The low utilization of IPRs in LMICs can be explained by factors such as inadequate awareness, the high cost of processing patent applications, weak enforcement, and weak research and development capacity. These are grounded in much deeper structural issues of inequities and power imbalances. The inequities in intellectual property have been evident recently in the particular context of the coronavirus disease (COVID-19) pandemic regarding vaccine production and patents. The well-developed legal, institutional, and other needed capacities of HICs, coupled with their close relationships with international private corporations, often leads to their protecting IPRs at the expense of their counterparts in LMICs. Group of Seven (G7) countries are thus better positioned, as HICs, to lead globally on intellectual property enforcement via coordinating initiatives. In addition, by leveraging on the flexibilities within the TRIPs, G7 countries can encourage future technologies within LMICs to help them address challenges and utilize opportunities related to intellectual property.

Another example of a challenge facing LMICs is evolving trends in intellectual property related to genome editing, which may drive technology access across organizations and influence the reach of public-good research and development (R&D) efforts in ways that disadvantage the citizens of LMICs. Analysis triangulating patents, published research, and public news searches reveals that, globally, the public sector leads the foundational CRISPR-Cas9 intellectual property landscape (Martin-Laffon et al. 2019). CRISPR-Cas9 edits genes by cutting DNA and then letting natural repair processes take over, an example of a technological innovation that is improving therapies. The People's Republic China's (PRC) public institutions currently lead the world in published research and patent filings. The United States (US) is in second place, with the public sector dominating research, and the private sector dominating patent filings via a growing and diversified

set of commodities and institutions. Most of the research and patent filings relate to the genetic modification of rice, driven by the PRC, with research focused on seven other crops/plants across 24 countries. Overall, 42 other plant/species innovations have patents filed. Foundational patent holders are explicitly licensing their proprietary positions and providing incentives for strategic alliances that promote access to intellectual property-protected R&D inputs. In that context, international and national agriculture research organizations have successfully negotiated licensing agreements for CRISPR-Cas9. Finally, more private sector licensors of genome editing technologies are negotiating multiple-partner intellectual property licenses for the development of agriculture and industrial applications. Major biotechnology firms are also negotiating licenses with several CGIAR centers, small private firms, and startups.

Due to these global challenges, it is proving increasingly difficult for LMICs to improve intellectual property access for pro-poor innovations, such as vaccine development and genetic modification technology. Initiatives such as the Continental Strategy for Geographical Indications in Africa under the African Union are promoting sustainable food security in Africa, particularly to enable local farmers, associations, and authorities to boost local products through value addition. G7 countries can leverage such initiatives to create a more level playing field for LMICs through the continued development of novel, productive mechanisms that will support intellectual property access for pro-poor innovations. In doing so, however, several problems need to be overcome.

Low Awareness of IPRs

The lack of awareness of the benefits and value of intellectual property globally, but specifically in LMIC contexts, is still a big challenge. Africa's creativity largely occurs in the informal sector and depends on networks among small and medium-sized enterprises (SMEs) (Lora-Mungai and Pimenta 2021). This was apparent during the COVID-19 pandemic, which greatly affected revenues and led to the closure of many informal businesses (Gachara 2020). In addition, the use of formal intellectual property systems is very low in African countries relative to other parts of the world, and Africa's IPR environment has not been fully exploited (UN 2022). Using patent registrations as an innovation indicator, in 2019, Africa's patent registrations comprised 0.5% of the world's total, as compared with Asia (66.6%), North America (19%), and Europe (10.9%) (WIPO 2020). Similarly, many African countries lack the necessary infrastructure to organize and digitalize information on patent applications for easier access by the public, including researchers and technology-oriented industries (Mgbeoji 2013).

No or Inadequate Capital to Commercialize Innovations

Costs related to the protection and commercialization of IPRs still hinder the adoption and use of the formal intellectual property system. Patents, for example, are regarded by SMEs as limiting in terms of costs related to registration, publication, and maintenance. Songwe (2020) indicates that some countries in Africa charge very high patent registration fees. For example, the fees in Côte d'Ivoire, Kenya, and Senegal are much higher than Canada, Japan, or the United Kingdom. Moreover, non-residents register more patents in Africa compared to residents. In 2018, residents in Africa registered about 3,120 patents, whereas non-residents registered 13,380 (UNECA 2021). This is partly explained by the ability of non-residents to afford the high costs of patent registration (Songwe 2020). In addition, the costs related to intellectual property protection often surpass the likely benefits (UN 2011). This is because developing new technologies and products

usually necessitates significant investment in R&D, yet the payoffs are uncertain. The costs may be recovered by way of setting prices beyond the marginal costs of production and limiting the scope and timeframe of protection. This allows creators to meet societal expectations to access new products and ideas once they have received satisfactory returns (World Bank 2002).

Weak Enforcement of IPRs

The weak legal enforcement of IPRs partially explains the low numbers of patent applications in LMICs, and the high rates of piracy and counterfeits of various products. Without sufficient enforcement, creators may not feel motivated to invent or pursue creative activities (Otieno 2017). In fact, unsatisfactory protection and enforcement of IPRs limits the benefits of investing in creative entrepreneurship and pushes creators to move to other regions with more favorable intellectual property systems. The strength of legal protection granted toward innovation also determines the will of firms to invest in R&D (WTO 2020). The efficacy of the intellectual property regime also varies depending on how effectively the national innovation systems are governed.

Proposal

We believe that the G7 nations can support several actions that will address the above challenges regarding inequities around the use, application, and benefits of IPRs.

Increase Awareness and Education on IPRs

According to the World Intellectual Property Organization (WIPO) (Burrone 2005), creating awareness and training in intellectual property can support better use of formal IPRs. With support from G7 countries, education, creation, and innovation can be stimulated through the sharing of ideas, knowledge, and information on IPRs among LMICs and between HICs and LMICs. The intellectual property system permits the fair allocation of resources for inventions and creativity, and this is the major justification for the protection of IPRs (ICC 2005). LMICs can use the intellectual property system to their advantage to promote traditional knowledge and products. With G7 support for capacity and institutional strengthening, LMIC policy makers can fully promote traditional knowledge, skills, and practices and formulate clear policies and procedures for intellectual property protection, such as copyright, and encourage commercialization.

Investment R&D for Intellectual Property

The ability of strong IPRs to kindle innovation in LMICs is also determined by relevant domestic technical ability (Daley 2014). Firms need to take on investments in R&D in order to innovate or improve products on the market. However, such investments are often risky and costly, and realizing the intended benefits may take a long time. Therefore, firms in LMIC contexts will only invest if they are well positioned to recover their expenses. Accordingly, suitable and active protection of intellectual property with the support of G7 countries provides room for LMIC businesses to make investments, and progress economically. For example, a strong patent system facilitates the transfer of technology and foreign direct investment, which, in turn, fosters the domestic transfer of technology and innovation. In addition, patent databases provide rich technical information, which LMICs can use to build up their technological capacity. It is important

to ensure as well that complementary legal frameworks are in place, along with education and the awareness-raising of LMIC policy actors, to help protect their interests globally while also helping to promote their active uptake of such technological opportunities.

Improve Mechanisms and Systems for Enforcing IPRs

The strength and proper enforcement of IPR systems contributes to well-functioning market systems in LMICs that encourage innovation (Daley 2014). Various stakeholders across agencies need to have an input in the IPR system as opposed to solely relying on intellectual property offices and particular ministries or agencies whose agenda may not fit well with the overall development objectives. There is also a need to strengthen legal capacities within LMICs to understand, navigate, and use the legal and regulatory routes available internationally to protect their rights. Such improvements could be facilitated from within those national context, and with the support of the Group of Twenty (G20). The G7, working with the G20, can also support a form of international governance or oversight mechanism that could help prevent powerful, multinational corporations (and their HIC hosts) from more easily engaging with the legal system in their favor because of their relative depth of expertise and resources.

Implementation

G7 nations have the capacity to devise and implement support mechanisms that can help create a more equitable set of relations and regulations regarding IPRs. This could take the form of direct support to LMICs to create a more level playing field and could include approaches to self-regulation for G7 nations regarding engagement by government and multi-national corporations in negotiations and agreements on IPRs with LMICs. We recommend the following steps.

Create Equity and Rights-Based Awareness on IPRs

The intellectual property regime should support scientific progress to benefit society as a whole, with both individuals and communities having easy and equal access to information on IPRs without discrimination and participating fully and meaningfully. One avenue can be through financial support by G7 countries to a major program of awareness-raising regarding the importance of intellectual property. This program should focus on LMIC contexts, but the benefits of having a more robust global framework for intellectual property would catalyze innovation that benefits people of all countries. Another avenue can be through the adoption of local modes of communication and using the local language to cover a wider audience. This, however, goes hand in hand with suitable government policies by G7 nations and LMICs to identify priorities for intellectual property investment and development (Chapman 1999).

R&D Investment via Building Local Support (Considering Local Needs and Interests) to Reduce Costs

Cooperation can enable countries to transfer and share new technologies as they emerge. LMICs, with financial and awareness-raising support from G7 nations, can design intellectual property systems considering local, social, industrial, and commercial needs. In Africa, for example, agriculture employs 54% of the continent's workforce (ILO 2022). Therefore, promoting agriculture and food

security is key for development as enshrined in the United Nations' 2030 Agenda for Sustainable Development (United Nations 2015) and the African Union's Agenda 2063 (African Union 2015). This is in line with efforts by G7 and G20 to support the African Union becoming a full member of the G20. Such a move can also promote global efforts that allow all people to benefit from technological innovation. Policy makers should focus on promoting the sustainable production of food and agricultural practices that are resilient and preserving the genetic diversity of seeds. The seed industry is mostly dominated by multinational biotech companies that promote genetically modified crops. Thus, interventions can be customized to concentrate on local crops and with the involvement of local farmers. New technologies can be introduced to local farmers; then, they can be supported by both the public and private sectors to improve or create advanced products or alternatives using their traditional knowledge and experiences in crop production.

Improve Mechanisms and Systems for Enforcing IPRs

Each country protects IPRs within its domestic laws and institutions, such as intellectual property offices, industrial property offices, and courts, among others. All these have a role to play in the effectiveness of an intellectual property system. However, much as each country determines its own laws and practices, these institutions must conform to the requirements of the international agreements to which a country is a member (Goans 2003). To strengthen the legal framework for IPRs, LMICs will need to clearly identify national enforcement institutions for adequate resource allocation; this offers a clear role for G7 nations through financial, capacity-building, and awareness-raising support. G7 nations can also help ensure and secure continued development of novel, productive mechanisms to gain intellectual property access for pro-poor innovations. Despite the positive trends in licensing for public-good genome-editing technologies, research institutions (e.g., CGIAR centers, international agricultural research centers, and national agricultural research organizations) still lack a critical mass of skilled personnel with sufficient capacities to consistently ensure their equitable access to these technologies. Nevertheless, external exchanges between institutions, organizations, and individuals can facilitate better access and utilization of technologies. Finally, the IPR regime must be rooted in the broader development strategies of LMICs, with financial support from G7 countries, to include investment in education, public health, and human capital to support local innovation and technology adoption (Türmen and Clift 2006).

References

- African Union. 2015. *Agenda 2063: The Africa We Want*. Addis Ababa: African Union. <https://au.int/en/agenda2063/overview>
- Burrone, E. 2005. Intellectual Property Rights and Innovation in SMEs in OECD Countries. *Journal of Intellectual Property Rights* 10: 34–43. <http://temp.uefiscdi.ro/EDIGIREGION/Intellectual%20property%20rights%20and%20innovation%20in%20SMEs%20in%20OECD%20countries.pdf>
- Chapman, A. R. 1999. *A Human Rights Perspective on Intellectual Property, Scientific Progress, and Access to the Benefits of Science*. WIPO/OHCHR, Intellectual Property and Human Rights, A Panel Discussion to Commemorate the 50th Anniversary of the Universal Declaration of Human Rights. Geneva. 7 November.
- Correa, C. M. 2015. Intellectual Property: How Much Room Is Left for Industrial Policy? *UNCTAD Discussion Papers* 223. United Nations Conference on Trade and Development. <https://ideas.repec.org/p/unc/disap/223.html>
- Daley, W. 2014. In Search of Optimality: Innovation, Economic Development, and Intellectual Property Rights. *Global Sustainable Development Report Prototype Briefs*. United Nations. <https://sdgs.un.org/sites/default/files/documents/5580Innovation%252C%2520Economic%2520Development%2520and%2520Intellectual%2520Property%2520Rights.pdf>
- Gachara, G. 2020. Policymakers Must Nurture Africa's Creative Economy. *African Business*, 20 November. <https://african.business/2020/11/tradeinvestment/policymakers-must-nurture-africascreative-economy/>
- Goans, J. W. 2003. *Intellectual Property and Developing Countries: An Overview*. Briefing Paper. Washington, DC: Nathan Associates Inc.
- International Chamber of Commerce. 2005. *Intellectual Property: Source of Innovation, Creativity, Growth and Progress*. BASCAP Issue. <https://iccwbo.org/publication/intellectual-property-source-innovation-creativity-growth-progress/>
- International Labour Organization (ILO). 2022. *World Employment and Social Outlook: Trends 2022*. ILO. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_834081.pdf
- Lora-Mungai, M., and P. Pimenta. 2021. *The African Film Industry: Trends, Challenges and Opportunities for Growth*. Paris: United Nations Educational, Scientific and Cultural Organization (UNESCO). <https://en.unesco.org/creativity/publications/african-film-industry-trends-challenges>
- Martin-Laffon, J., M. Kuntz, and A. E. Ricroch. 2019. Worldwide CRISPR Patent Landscape Shows Strong Geographical Biases. *Nature Biotechnology* 37(6): 613–20. <https://doi.org/10.1038/s41587-019-0138-7>
- Mgbeoji, I. 2013. African Patent Offices Unfit for Purpose. In *African Innovation: The Value of Collaborative IPRs*, J. DeBeer, C. Armstrong, and C. Oguamanam (eds.). Cape Town: University of Cape Town Press.
- Nwauche, E. S. 2005. A Development Oriented Intellectual Property Regime for Africa. *The 11th General Assembly of the Council for the Development of Social Science Research for Africa*. Maputo: CODESRIA.

- Otieno, L. 2017. Africa and Intellectual Property Rights: Where Do We Stand? *Vanguard*. 10 April. <https://www.vanguardngr.com/2017/05/africa-and-intellectual-property-rights-where-do-we-stand/>
- Songwe, V. 2020. A Continental Strategy for Economic Diversification Through the AFCFTA and Intellectual Property Rights. In *Foresight Africa: Top Priorities for the Continent 2020–2030*. Chapter 6. Washington, DC: Brookings Institute.
- Sukarmijan, S. S., and O. D. V. Sapong. 2014. The Importance of Intellectual Property For SMEs: Challenges and Moving Forward. *UMK Procedia* 1: 74–81.
- Türmen, T. and C. Clift. 2006. Public Health, Innovation and Intellectual Property Rights: Unfinished Business. *Bulletin of the World Health Organization* 84(5): 338. <https://apps.who.int/iris/handle/10665/269653>.
- United Nations (UN). 2011. *Intellectual Property Commercialization: Policy Options and Practical Instruments*. New York and Geneva: United Nations Economic Commission for Europe. <https://unece.org/sites/default/files/2022-01/ip.pdf>
- United Nations. 2022. *The Role of Intellectual Property Rights in Promoting Africa's Development: Overview of IPR in Africa*. Policy paper. https://www.un.org/osaa/sites/www.un.org.osaa/files/final_policy_paper_on_iprs_in_africa_fin_en_230822_v56883.pdf
- United Nations. 2015. *Transforming our World: The 2030 Agenda for Sustainable Development Goals*. New York: United Nations. <https://sustainabledevelopment.un.org/post2015/transformingourworld/publication>
- United Nations Economic Commission for Africa. 2021. *Towards a Common Investment Area in the African Continental Free Trade Area: Levelling the Playing Field for Intra-African Investment*. Addis Ababa: United Nations Economic Commission for Africa. <https://hdl.handle.net/10855/46741>
- World Bank. 2002. *Global Economic Prospects 2003: Investing to Unlock Global Opportunities*. Washington, DC: World Bank. <https://apps.who.int/iris/handle/10665/269653>
- World Intellectual Property Organization (WIPO). 2020. *World Intellectual Property Indicators 2020*. Geneva: World Intellectual Property Organization. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_941_2020.pdf
- World Trade Organization. 2020. *World Trade Report 2020: Government Policies to Promote Innovation in The Digital Age*. Geneva: World Trade Organization. https://www.wto.org/english/res_e/booksp_e/wtr20_e/wtr20_e.pdf

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