

# Revisiting development innovations in least developed countries

A practical review of selected intellectual  
property rights measures



United  
Nations

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**United  
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# Glossary

<b>AC</b>	Alternating current (power)
<b>AfCFTA</b>	African Continental Free Trade Area
<b>API</b>	Active pharmaceutical ingredients
<b>ARIPO</b>	African Regional Intellectual Property Organisation
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>ASSERT</b>	Association of Small-Scale Enterprises in Tourism (ASSERT)
<b>AU</b>	African Union
<b>AWGIPC</b>	ASEAN Working Group on Intellectual Property Cooperation
<b>BAPI</b>	Bangladesh Association of Pharmaceutical Industries
<b>CIRAD</b>	Agricultural Research for Development Center
<b>CMO</b>	Collective management organization
<b>COMESA</b>	Common Market for Eastern and Southern Africa
<b>CORFO</b>	Chilean economic development agency
<b>CST</b>	Certification for Sustainable Tourism program
<b>DC</b>	Direct current (power)
<b>DGIPR</b>	Directorate General of Intellectual Property Rights
<b>DRM</b>	Digital rights management
<b>EAC</b>	East African Community
<b>ECOWAS</b>	Economic Community of West African States
<b>EPA</b>	Economic Partnership Agreement
<b>EU</b>	European Union
<b>FDI</b>	Foreign direct investment
<b>FSC</b>	Forest Stewardship Council
<b>FTA</b>	Free Trade Agreement
<b>FTRI</b>	Frontier Technology Readiness Index
<b>GI</b>	Geographical indication
<b>GII</b>	Global Innovation Index
<b>HBTL</b>	Himalayan Bio Trade Private Limited
<b>ICT</b>	Information and communication technology
<b>ICT</b>	The Costa Rican Tourism Institute
<b>IP</b>	Intellectual property
<b>IPR</b>	Intellectual property right
<b>KTBR</b>	Kebab Turki Baba Rafi
<b>LBC</b>	Lao Brewery Co. Ltd
<b>LDC</b>	least developed country
<b>MyIPO</b>	Malaysia Intellectual Property Office

<b>MSMEs</b>	Micro, small and medium-sized enterprises
<b>NEE</b>	Nibban Electric and Electronics
<b>NGO</b>	Non-governmental organization
<b>OAPI</b>	Organisation Africaine de la Propriété Intellectuelle
<b>OHIM</b>	Office for Harmonization in the Internal Market
<b>PAIPO</b>	Pan African Intellectual Property Organisation
<b>PCI</b>	Productive Capacities Index
<b>PCT</b>	Patent Cooperation Treaty
<b>PEPY</b>	Promoting Education, Empowering Youth
<b>PET</b>	Polyethylene terephthalate
<b>PETRONAS</b>	Petroleum Nasional Berhad
<b>PGS</b>	Participative guarantee system
<b>PLT</b>	Patent Law Treaty
<b>R&amp;D</b>	Research and development
<b>REC</b>	Regional Economic Community
<b>SADC</b>	Southern African Development Community
<b>SITC</b>	Standard International Trade Classification
<b>SME</b>	Small and medium-sized enterprise
<b>SPS</b>	Sanitary and phytosanitary
<b>TRIPS</b>	Agreement on Trade-Related Aspects of Intellectual Property Rights
<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>USPTO</b>	United States Patent and Trademark Office
<b>WB</b>	World Bank
<b>WCS program</b>	World Class Suppliers program
<b>WDI</b>	World Development Indicators
<b>WIPO</b>	World Intellectual Property Organization
<b>WTO</b>	World Trade Organization
<b>UM</b>	Utility Model
<b>VSI</b>	Vientiane Steel Industry Co. Ltd
<b>YISI</b>	Youth Innovators' Space and Incubator Program





# INTRODUCTION

Intellectual property rights (IPRs) have never been more economically and politically important than they are today. Different forms of IPRs are mentioned in debates on diverse topics, such as public health, food security, trade, education, biodiversity and others. In today's knowledge economy, it becomes indispensable for least developed countries (LDCs) to gather a good understanding of how IPRs function and on what form of IPR may be better suited to protect various forms of innovation. This is key to inform policy making at the domestic level.

Some authors have argued for IPRs to be delinked from issues such as trade, in order to make more space for other issues, such as human rights (Ncube et al., 2017, p. 28). This is due to an obsolete perception of how trade is conducive to innovation and socio-economic growth in LDCs. For decades, the United Nations Conference on Trade and Development (UNCTAD) has been calling for a paradigm shift away from traditional development paths, which have reinforced commodity dependence, towards new ones centered on building new and fully using existing productive capacities. UNCTAD (2004) already called for national and international policies to be rooted in a development-driven approach to trade, rather than a trade-driven approach to development. The shift toward the development of productive capacities could enable LDCs to diversify their economies and exports, and thus move away from dependence on primary commodities. LDCs need to redirect the development path that they have been following up until now, as it has resulted in insufficient progress by most LDCs along the three dimensions of sustainable development: economic, social and environmental. Vulnerabilities and gaps in the current development model acutely exposed by the COVID-19 pandemic require the adaptation of a development strategy that allows for growth and structural transformation, while taking into account social and environmental aspects (UNCTAD, 2022a).

In LDCs, 35 per cent of the population is living below the international extreme poverty line of \$1.90 per day. Similarly, the incidence of poverty using the \$3.20 per day is 60 per cent, while the headcount ratio under the highest international poverty line of \$5.50 per day is estimated at 84 per cent (UNCTAD, 2021). One consequence of this generalized poverty is that domestic markets are limited and stagnant, thus incentives to invest and innovate are weak. Often, to undertake patent-driven innovation, a certain level of education is required. It needs to be kept in mind that only between 1% and 10% of total students who completed a short tertiary cycle in LDCs between 2015 and 2022 were women. Alone, these percentages highlight the crushing gender divide existing in innovation in LDCs. On top, an average of 22% of Government expenditure in education was invested in tertiary education in LDCs during the same period. While the latter seems to be high, it needs to be mentioned that in absolute terms, LDCs start from a very low base<sup>1</sup>.

The Oslo Manual (OECD & Eurostat, 2005) defines innovation as the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organisation or external relations. While this definition may be adequate for mature economies, it may not be suited to the realities of LDCs. There, innovation occurs mostly through small, gradual improvements to an existing product, services, or processes, mostly in small and medium-sized enterprises (SMEs). Also, a significant share of domestic innovation is taking place in the informal sector.

Specifically, technological learning and technical change in LDCs take place primarily by using and improving technologies that already exist in advanced industrial countries or other developing countries, which need to be adapted for local conditions. Key technological capabilities are related to: the acquisition of mature technologies, including simple assembly, product specification, production know-how, technical personnel and components and parts; the ability to undertake incremental innovations to adapt technologies to local conditions; the ability to develop new markets through close links with customers and strategic management of marketing functions; and to develop linkages with other enterprises, public research organizations and technology transfer agencies. For most LDCs, the three most important sources of building their endogenous knowledge base are likely to be education and strengthening of the skills base; foreign technology transfer; and the mobility of experienced technical personnel (UNCTAD, 2006). Importation of foreign technology, reverse engineering of existing mature foreign products, and the mobility of experienced technical and managerial engineering personnel can be harnessed to bring about effective adoption, adaptation and diffusion of imported technologies to their economies.

The process of innovation within a country depends critically on its links with the rest of the world. At the initial stage, technology is transferred through informal channels of technology transfer (such as the acquisition of machinery and equipment, reverse engineering, and subcontracting), and through formal modes of transfer, mostly through foreign direct investment (FDI). In the case of LDCs, the latest figures show that FDI inflows

<sup>1</sup> World Bank (WB) World Development Indicators database (WDI), accessed in August 2023.

have experienced an annual increase of a mere 3% between 2011 and 2021, accounting for less than 2% of the global FDI inflows and of some 3.3% of the total FDIs going to other developing countries; and import of machinery and transport equipment (SITC 7)<sup>2</sup> only accounted for 22% of total import in 2021 (compared to 38.3% for other developing countries). Worryingly, these imports have grown at an average annual growth rate of 0.2% in the past 5 years, compared to 3% in other developing countries. Clearly, LDCs are only modestly benefiting from the technology transfer potential originating from the above two channels. Furthermore, licensing of foreign technology is mostly out of reach for firms in LDCs, which often do not have the minimum level of absorptive capacity, as their domestic productive capacities are either not fully exploited or too weak to enable it.

Importing foreign-designed IPRs may not be the solution. Instead, LDCs' domestic IPR strategy needs to be aligned with current local needs and conditions, educational achievements, and to serve local necessities associated with domestic SMEs. As Ncube et al. (2017) so eloquently put it, what LDCs need are "better", not "more" patents.

This paper looks at how LDCs can innovate using traditional IPR policies and then looks at how innovation is developing in the informal sector. LDCs have a variety of needs and equally have a variety of IPRs at their disposal to serve their domestic socio-economic and development needs, as well as their international obligations. Companies can choose formal intellectual property, which includes patents, trademarks, registered designs, copyright, among others. They can also choose a range of 'alternative' or informal appropriation mechanisms, such as secrecy, confidentiality agreements, lead time, or complexity (Hall, et al. 2013). As a lot has been written in this area, the paper does not attempt to be exhaustive.

This paper argues that LDCs need to build at least a critical minimum level of productive capacities and technological capabilities to make full use of the formal and informal IPRs as well as of existing flexibilities.

The analysis focuses on six kinds of IPRs and provides case studies based on the experience undertaken in LDCs or in other developing countries. Although the paper attempts to include the experience of both Asian and African countries, there may be a tilt towards Africa. This is unavoidable given that, within the next decade, the LDC group will mostly be comprised of African countries, if the current graduation cases<sup>3</sup> are confirmed.

The Annexes contain an update of the status of the ratification and signature process of the main 34 international IP-related agreements (Annex 1) as of June 2023; a summary of selected IP treaties, policies, protocols at the regional and international levels that are relevant for LDCs (Annex 2) and an update of the national legislation process related to Utility Models (UMs) in LDCs (Annex 3).

Following this introduction, the remainder of the paper is organized according to the following structure. Section 2 assesses the international IP treaties adopted by the LDCs as of June 2023 and looks at the available flexibilities therein. It also looks at the type of intellectual property (IP) protection at the regional and continental level. Section 3 covers some forms of innovation available within the formal economy, while Section 4 looks at how LDCs innovate in the sectors that are arguably considered areas with development potential, namely mining, pharmaceutical, tourism and the financial sector. Undoubtedly, value-added agriculture and agro-industry have vast potential to support the economic and export diversification efforts of LDCs. However, given the wide variety of agricultural patterns and specificities across LDCs and the specific types of innovation and protection available in the sector, such as genetic varietal protection, consideration of the agro-industrial sector remains beyond the scope of the present analysis. The paper then analyses how innovation is carried out in the informal sector<sup>4</sup>. Section 6 concludes and provides policy recommendations.



INTERNATIONAL TREATIES,  
EXISTING FLEXIBILITIES AND  
REGIONAL/CONTINENTAL  
PROTECTION

LDCs have ratified several international IP treaties over the years. Annex 1 contains a list of the signed and/or ratified IP treaties by LDCs, as of June 2023. Although international norms are largely set by the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), LDCs vary in their membership in a number of other relevant treaties. Notwithstanding the reality that implementation and enforcement vary on a country-by-country basis, there is a high rate of subscription to most of the 34 treaties analyzed. 38 LDCs have signed the Berne and the Paris Conventions. However, for 19 of the 34 international treaties, less than 10 LDCs have undertaken the necessary ratification process.

Surprisingly, 35 LDCs have already ratified the WTO TRIPS agreement (see Annex 2), many have done it when joining World Trade Organization (WTO). There was no rush, as TRIPS Art. 66.1 gives LDCs a compliance transition period, which exempts them from TRIPS compliance, except for Art. 3 (national treatment), Art. 4 (most favored nation treatment) and Art. 5 (precedence of WIPO procedures) and the TRIPS preamble recognizes the special situation of LDCs for maximum flexibility in implementing laws and regulations domestically. The transition period has recently been extended until July 2034, or to 2033 for pharmaceutical products, or earlier, if an LDC graduates out of the category.

Many commentators consider these IP instruments to be “rich-world driven” failing to support the realities in many LDCs (deBeer et al., 2018: 77). The relationship between IP law and economic development, and the role IP can play as a means of achieving economic development has been “misunderstood” by developed and developing country policymakers alike. Developed countries began with minimal IP protection to encourage innovation and economic growth. These systems were incrementally strengthened in tandem with their level of economic development (Ncube, 2013). Having an IP system - akin to that of developed countries - alone - does not guarantee economic growth or socio-economic development.

International treaties set out minimum protections, while leaving room for national governments to implement the provisions differently, to legislate in areas not covered by the agreement and to legally interpret the provisions in the agreement in order to determine the scope and content of the applicable obligations. The latter determines the actual policy space available in TRIPS and the different options available are referred to as “TRIPS flexibilities” (Syam & Syed, 2023). The TRIPS preamble clearly recognizes “the special needs of LDCs in respect of maximum flexibility in the domestic implementation of laws and regulations in order to enable them to create a sound and viable technological base.” TRIPS flexibilities do not encompass only those listed in Art. 66.1. They include also variations on how TRIPS norms are interpreted and implemented. For example, the health-related flexibilities in TRIPS are as follows:

1. Flexibility in the choice of patentability criteria, including for chemical entities and biologics. WTO members have considerable policy space to define what an ‘invention’ is and to apply rigorous standards of patentability to avoid the grant of patents that, without making a genuine technical contribution, may distort market competition.
2. Compulsory license. Widely recognized in the legislation of developed and developing countries-and granted since the adoption of the TRIPS Agreement by administrations or courts in countries such as Thailand, Ecuador, Indonesia, India, United States, Italy, and Germany, compulsory licenses may be necessary to correct market distortions (abuses of market power, unfair pricing, refusal to license, etc .) .
3. Government use authorization. In many cases governments may decide, consistently with the TRIPS Agreement, to use patented inventions for non-commercial purposes, such as for ensuring the supply of essential medicines.
4. Compulsory licenses for the supply of medicines to countries with a lack of or insufficient manufacturing capacity. Compulsory licenses exclusively for the export of medicines can be granted under the amendment introduced to the TRIPS Agreement in 2017 and the waiver adopted by the WTO in 2003.
5. Test data protection. The TRIPS Agreement (Article 39 .3) requires WTO members to protect test data against unfair competition, which does not create exclusive rights. The Agreement is complied with if legislation on unfair competition is implemented to protect such data.
6. Parallel importation. Importing protected medicines from any country where they can be purchased cheaper than locally is consistent with the TRIPS Agreement.
7. Pre - and post-patent grant opposition. Patent office procedures for granting patents provide for the possibility for third parties to contribute to the examination process through ‘observations’ or ‘oppositions,’ whether before or after the grant of a patent, or both.
8. Use of competition law to address the misuse of IPRs. Competition law may be applied to correct market distortions created through the abuse of IPRs.

9. Bolar exception. ‘Bolar exceptions’ (allowing the use of a patented medicine for the purpose of conducting research and tests for regulatory approval for generic medicines) are important to accelerate the entry of generic products and promote a dynamic market for medicines.

10. Research or experimentation exception. This exception allows research to be conducted by third parties on patented inventions, for instance, to improve them or derive new inventions.

11. Disclosure requirement, particularly for biologics. The full and precise disclosure of an invention is crucial for the patent system to perform its informational function. This is particularly relevant for biologicals, which cannot be described in the same way as medicines produced by chemical synthesis.

12. Flexibilities in enforcement of IP. Measures to enforce IPRs, such as reversal of the burden of proof, determination of infringement by equivalence and damages, and border measures, if overly broad, may distort competition by discouraging or preventing market entry and the availability of generic medicines. Provisional injunctions need to be cautiously granted so as not to distort the market dynamics, generally after giving the alleged infringer an opportunity to articulate their defense. Permanent injunctions may be denied for public health reasons under certain circumstances.

13. Security exception. Compliance with obligations under the TRIPS Agreement can be suspended, *inter alia*, in cases of emergency in international relations, such as in the case of a pandemic (Article 73 (b) of the Agreement).

Source: South Center, <https://ipaccessmeds.southcentre.int/wp-content/uploads/2018/12/Public-Health-Related-Flexibilities-in-the-TRIPS-Agreement.pdf>.

The above flexibilities will continue to be available to WTO LDC members also after graduation from the category. By then, those graduated LDCs should have acquired the legal capacities to use these flexibilities once they lose the LDC-specific ones (Syam & Syred, 2023).

The proliferation of international treaties over the years, and related ratifications, may have constrained Governments’ efforts to tailor their policies to national priorities. Bilateral Free Trade Agreements (FTAs) may have had the same effect. For example, the European Union’s (EU’s) bilateral free trade agreements and Economic Partnership Agreements (EPAs) typically include a chapter on IPR, which “as far as possible offer similar levels of IPR protection to those existing in the EU, while taking into account the level of development of the trading partners [. . .]. The EU aims to bring the IP law of the trading partners as close as possible to the EU *acquis*” (European Commission, 1998: 38). Often, the IPR chapters included in FTAs commit to a high level of protection, going beyond the standards of the TRIPS Agreement. The goal is for “innovations, artworks, brands to be better protected against being unlawfully copied, including through stronger enforcement provisions” (*ibid*: 44).

The world has moved beyond one-size-fit-all strategies. Yet, LDCs are adopting IPRs to their economies, even when they may not be suited to their development level and/or goals. This may have resulted in the present lack of cogent and coordinated IP frameworks. Currently, IPRs rules in most developing countries and LDCs are largely fragmented and are heavy reliant on developed country-designed IP laws, in spite of LDCs’ minimal IP expertise and administrative capacity. “Many LDCs have gone above and beyond what was required of them” (Ncube, 2016: 8), as a result. While developing country-specific IP laws are crucial, to maximize the full developmental potential of IPRs, a coordinated, international, and harmonised IPR system is paramount<sup>5</sup>.

### Regional IPR Protection

As highlighted in Annex 2, in Africa, home to 33 of the 46 LDCs, the African Regional Intellectual Property Organisation (ARIPO) and the Organisation Africaine de la Propriété Intellectuelle (OAPI) are two regional institutions that manage intellectual property. While OAPI predominantly serves the French-speaking nations of Africa, ARIPO primarily serves the English-speaking nations of Africa. Only 37 African nations are members of either organisation, leaving 17 countries “with national IP regulations that are, in most cases, obsolete<sup>6</sup>” exacerbating the fragmentation of IPRs protection on the continent.

<sup>5</sup> “AfCFTA Phase II: Towards Active Participation of ECOWAS in the Intellectual Property Rights Negotiations’ (Afronomicslaw.org) <<https://www.afronomicslaw.org/2019/10/30/afcfta-phase-ii-towards-active-participation-of-ecowas-in-the-intellectual-property-rights-negotiations>> accessed 19 July 2023.”

<sup>6</sup> *Ibid*

Through the Harare Protocol, the ARIPO office is empowered to receive and process patents, industrial designs, and utility model registration on behalf of its 20 contracting parties<sup>7</sup> however, the final approval for registration is vested in the national IP offices<sup>8</sup>. The latter often rely on the ARIPO office for substantive examination, given the limited capacity at the domestic level (Shashikant, 2014). ARIPO's protocols serve to harmonise legislation and are not binding for its member States, unless they are converted into national laws. In contrast, under the OAPI, the 17 member States<sup>9</sup> party to the Bangui Agreement have a unified IP registration office for IPRs acquisition, maintenance, and enforcement of IPRs. Applicants are granted the same protection for patents, trademarks and designs, models, and commercial names in all the member States (UNECA, 2021). "OAPI does not conduct substantive examination but grants regional patents by relying & search and examination results of corresponding applications by the European Patent Office" (Syam and Syed, 2023: 27).

OAPI & ARIPO's limited capacity and resources, increases the likelihood of proliferation of IPRs applied for, limiting the freedom to operate for local industries in technology sectors covered by granted patents (Syam and Syed, 2023). Before these regional institutions recommend any policy change, a careful cost/benefit assessment should be undertaken. This is to avoid constraining members' flexibility. For example, OAPI undertook an extensive revision of the Bangui Agreement in 1999 to incorporate TRIPS standards during the LDC transition period, which was not strictly speaking necessary. "OAPI's early adoption of TRIPS standards has been attributed to various factors, including inappropriate advice [...], coupled with resource and expertise constraints which led to a less than full appreciation of what was at stake" (Ncube, 2016: 8).

Similarly, several African Regional Economic Communities (RECs) have provided leadership in relation to the implementation of TRIPS flexibility and more broadly in relation to IPRs, particularly under the Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), and the Southern African Development Community (SADC), see Annex 2 for details.

In 2013, COMESA adopted a policy on "Intellectual Property Rights and Cultural Industries". According to that policy, members shall promote, encourage and facilitate, the generation, development, exploitation, licensing, and protection of IPRs. In the policy, members are to afford protection to copyrights (including computer software), patents, industrial designs, trademarks, service marks, layout designs, commercial names and designations, and geographical indications<sup>10</sup>.

Under the EAC, its members have adopted several instruments with IPRs provisions, which have espoused TRIPS-plus provisions. It has been argued that the latter were not totally appropriate for their LDC members (Ncube et al. 2017). The EAC Treaty, the EAC Customs Union Protocol, and the EAC Common Market Protocol touch on IPRs laws harmonization in the REC and call for member States to conclude a specific Protocol on IP<sup>11</sup>. A draft IP policy has been prepared but has not been adopted<sup>12</sup>.

Additionally, in 2018, the EAC adopted a regional policy on the utilization of public health-related TRIPS flexibilities. The overall objective of this Policy is to guide the EAC members on how their national IP legislation must be adjusted to enable them to fully utilise the Public Health-related WTO-TRIPS Flexibilities.

The Common Market Protocol calls on the EAC Council to issue directives to EAC Partner states to cooperate in the administration, management and enforcement of IPR and to eliminate discriminatory practices in the administration of IPR amongst partner states. The Protocol invites EAC partner states to establish mechanisms that ensure the legal protection of the traditional cultural expressions, traditional knowledge, genetic resources and national heritage, the protection and promotion of cultural industries, the use of protected works for the

<sup>7</sup> Botswana, Eswatini, Gambia, Ghana, Kenya, Lesotho, Liberia, Malawi, Mozambique, Namibia, Rwanda, Sao Tome and Principe, Seychelles, Sierra Leone, Somalia (not a member of the Harare Protocol), the Sudan, the United Republic of Tanzania, Uganda, Zambia, and Zimbabwe.

<sup>8</sup> "Ariipo.Pdf". <<https://inspire.wipo.int/system/files/aripo.pdf>> accessed 21 July 2023.

<sup>9</sup> Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo, Equatorial Guinea, Gabon, Guinea, Guinea-Bissau, Ivory Coast, Mali, Mauritania, Niger, Senegal, Togo.

<sup>10</sup> In February 2020, COMESA and the World Intellectual Property Organization (WIPO) signed a cooperation agreement for collaboration in capacity-building programmes on IPRs 'COMESA, WIPO Sign Pact to Boost Intellectual Property Rights – Common Market for Eastern and Southern Africa (COMESA)' <<https://www.comesa.int/comesa-wipo-sign-pact-to-boost-intellectual-property-rights-2/>> accessed 24 July 2023.

<sup>11</sup> Article 38 EAC Customs Union Protocol

<sup>12</sup> 'Development of The East African Regional Policy for Intellectual Property' (easteco) <<https://easteco.org/development-of-the-east-african-regional-policy-for-intellectual-property/>> accessed 25 July 2023.

benefits of the communities in the partner states and cooperation in public health, food security, research and technological development (Art. 43 EAC, Common Market Protocol).

Art. 103 of the EAC Treaty and Art. 43 of the EAC Common Market Protocol set out the framework for regional cooperation and harmonization of IPR policies. Furthermore, efforts have been made to facilitate the manufacture and imports of essential medicines (through the Regional IP Protocol and Policy on the utilization of Public Health-related TRIPS flexibilities) and to fight counterfeit and pirated goods (through the Anti-counterfeiting Bill).

Similarly, in the Economic Community of West African States (ECOWAS), the West African Health Organization, & Ecowas regional agency charged with the responsibility of safeguarding the health of the peoples in Ecowas, developed a “TRIPS Flexibilities Policy and Guidelines”. The focus of the Policy was to indicate the general use of the flexibilities and safeguards provided by the TRIPS Agreement, identify gaps in national legislations and address challenges, opportunities and benefits to member States.

Recognising the challenges from fragmented IPRs regimes, in 2016, the African Union (AU) attempted to harmonise the IPRs system in Africa. The AU's attempted to resolve the policy incoherence and inconsistency and to ensure continental inclusiveness through the Pan-African Intellectual Property Organisation (PAIPO). The latter is aimed as a single Pan-African IP organisation to harmonise IP and stimulate social and economic development in Africa (and as part of Agenda 2063), which has not come into force as only a handful of countries has ratified it, too few compared to the requisite number of ratifications (15 members of African Union).

Furthermore, the African Continental Free Trade Area (AfCFTA) Protocol on IP, adopted in February 2023, is aimed at harmonising the IPRs framework within Africa and aligning it with the continent's overall development agenda<sup>13</sup>. Its general objective is to support the realization of the objectives of the AfCFTA by establishing harmonized rules and principles for the promotion, protection, cooperation, and enforcement of IPRs. Amongst the Protocol's specific objectives, it seeks to support intra-Africa trade (Art. 2.2) and amongst the general guiding principles to promote intra-African trade (Art. 4). It further aims at facilitating the maximum level of innovation in its member countries. It further recognises the developmental needs of LDCs by granting them three extra years before they need to implement the provision of the protocol (Art. 35).

In harmonising IPRs regimes on the continent, the AfCFTA IP Protocol recognises the existence of other regional IP instruments and provides that in the event of conflict or inconsistency with other regional IP agreements, the AfCFTA IP Protocol will prevail to the extent of the specific inconsistency<sup>14</sup>. Art. 31 contains the establishment of an AfCFTA Intellectual Property office, which should cooperate with the national, regional and international Intellectual Property offices. The protocol is to be implemented by the Committee on Intellectual Property Rights, which is a body established by the Council of Ministers to facilitate the implementation of the protocol and further its objectives (Article 30.1 of the AfCFTA IPR Protocol). It is envisaged that the Committee should oversee the harmonization of IP laws and policies among the AU member States. The protocol also provides for enforcement measures (Articles 25 – 29 of the AfCFTA IPR Protocol) and dispute settlement mechanisms (Article 37 of the AfCFTA IPR Protocol) to ensure compliance. Disputes arising from this Protocol are to be settled in accordance with the AfCFTA Protocol on the Rules and Procedure on the Settlement of Disputes.

Furthermore, the Protocol recognises that the implementation of multilateral and bilateral treaties or agreements relating to intellectual property rights need to prioritize African interests and the protection of African innovation and creativity, and deepen intellectual property culture in Africa. However, it does so by targeting conventional IP rights. Less traditional forms have not been considered. An example is the possibility of introducing a Community Trademark system, which would have simplified (and made cheaper) the IP protection process of a brand across Africa (Ncube et al., 2019).

Under the Association of Southeast Asian Nations<sup>15</sup> (ASEAN), there is also the desire to create a uniform IP system in the region to achieve economic integration. The ASEAN Working Group on Intellectual Property Cooperation (AWGIPC), composed of the IP offices of the ASEAN member States, created a 10-year action plan known as the ASEAN IP Rights Action Plan 2016-2025. The action plan identifies four strategic goals and

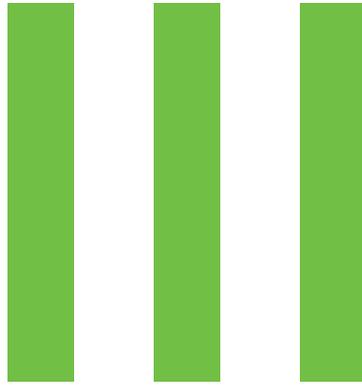
<sup>13</sup> Countries have yet to ratify it (as of August 2023). Art. 35 requires each member to implement the provisions upon the latter's entry into force. The mechanisms of implementation are left to each country.

<sup>14</sup> Article 19 AfCFTA Agreement.

<sup>15</sup> Cambodia, Lao People's Democratic Republic and Myanmar are LDC member of ASEAN.

19 initiatives that will contribute to the collective transformation of ASEAN into an innovative and competitive region using IP – see Annex 2 for details.

It needs to be stated that in spite of having adopted various national laws and protocols, the real challenge for LDCs is lack of enforcement and awareness. Since 2010, a lot has been done. Yet, the vast majority of firms and entrepreneurs in LDCs are unable to make use of those domestic laws, whose applications may be too far away from their socio-economic realities.



# INNOVATION IN THE FORMAL ECONOMY

This section will walk the readers through six major forms of IP protection, namely patents, utility models, industrial designs, trademarks, copyrights, and geographical indications. Examples of how these forms of protection are used in LDCs and in other developing countries are provided. These are meant as suggestions of how the above can be used. Other legal methods (especially relevant for the agricultural and agro-industrial sector) are not considered, as they are out of scope.

### 3.1 Patents

A new invention that involves an inventive step and is capable of industrial application is protected from unlawful exploitation through the intellectual property right known as a patent. This is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem<sup>16</sup>.

An invention in all fields of technology is capable of being patented if it is new, involves an inventive step (non-obvious), and is capable of industrial application (useful). Generally, the patent owner has the exclusive right to prevent an unauthorized person from commercially making, using, distributing, importing, or selling the patented product or process. Patent protection is granted through registration. To get a patent, technical information about the invention must be disclosed to the public in a patent application. Patent protection is granted for a limited period, generally 20 years from the filing date of the application. Once the protection period ends, the invention enters the public domain, and anyone can commercially exploit the invention without infringing on the patent.

In patent applications, the priority date is very important, which is the date on which the applicant originally submitted a patent application for an invention. It acts as a key reference point in the patent application process, establishing the time frame for determining the invention's novelty and non-obviousness, as well as the applicant's ownership of the invention in situations where multiple parties are vying for a patent on similar or related inventions. Usually, the first person to submit a patent application for a certain invention typically receives the patent rights, regardless of who came up with the idea first. The priority date is also very important especially when filing patent applications in multiple countries. By filing an initial application in one country (often referred to as the "priority application"), an applicant can later file corresponding applications in other countries within a specified time frame (usually 12 months) while retaining the original priority date.

Patents are territorial and are mainly governed by national IP laws. In general, the exclusive rights are only applicable in the country in which a patent has been filed and granted, by the law of that country. Nevertheless, there are international and regional agreements that facilitate some aspects of registration in multiple jurisdictions such as the Patent Cooperation Treaty (PCT).

Through the PCT, administered by the World Intellectual Property Organization (WIPO), applicants in member States can seek patent protection internationally for their inventions. By filing one international patent application under the PCT, applicants can simultaneously seek protection for an invention in up to 157 States. The Patent Law Treaty (PLT) on the other hand was adopted in 2000 to harmonize and streamline formal procedures concerning national and regional patent applications and patents and to make such procedures more user friendly. The PLT provides absolute and maximum sets of requirements that the office of its 43 Contracting Parties may apply. This means that a Contracting Party is free to provide for requirements that are more generous from the viewpoint of applicants, but that the requirements under the PLT are mandatory as to the maximum an office can require from applicants.

The Paris Convention and TRIPS provide for minimum standards that its members must accord to patent protection. By Article 27 (2) TRIPS, WTO members may exclude inventions from patentability in their territory where it is necessary to protect public order or morality, human, animal or plant life or health or to avoid serious prejudice to the environment. WTO members may also exclude from patentability diagnostic, therapeutic, and surgical methods for the treatment of humans or animals. They can also exclude plants and animals (other than micro-organisms), and biological processes for their production (other than microbiological processes) from patent protection. WTO members may also limit the exclusive rights conferred on patent holders, provided that the limitations do not unreasonably conflict with the normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner.

Additionally, member States of both the WTO and the Paris Convention have the right to create a framework for the grant of compulsory licenses, one of the flexibilities in the field of patent protection included in the TRIPS Agreement. By compulsory license, the government through legislation allows a third party to use the patented product or process without the consent of the patent owner. However, this can only be done under

specific conditions set out in the TRIPS Agreement aimed at safeguarding the interests of the patent holder. Two main conditions are that an effort must first have been made to obtain a voluntary license on reasonable commercial terms and conditions and that the remuneration paid to the right holder shall be adequate in the circumstances of each case, taking into account the economic value of the license.

It needs to be emphasized that low levels of awareness, limited use of information and communication technologies (ICTs), high fees, inadequate regulatory frameworks and lack of specialized skills within the IP offices contribute to explaining the low number of applications in LDCs. Furthermore, the above limitations with the customs, policy and judiciary limit the LDCs' capability to tackle IP infringement and violations. Table 1 shows that, on average, LDCs have the lowest level of productive capacities, as indicated by their score on the overall Productive Capacities Index (PCI) (31 vs 46.8 for other developing countries), and their low performance on the Frontier Technology Readiness Index (FTRI) (0.19 compared to a world average of 0.5). Moreover, LDCs are at the bottom of the ranks of the Global Innovation Index. Following the worldwide trend, LDCs file mostly trademarks (average of 2,197 annual applications over the period 2017-2021), 50% of which are filed by locals. Similarly, an annual average of 55 patents, by filing offices, have been filed by LDCs during the period 2017-2021, one third by locals.

Over the years, due to the high cost of pharmaceuticals, the recognition of the need for the most vulnerable in the world to have access to affordable medicines, and the need to still provide incentives for research and development, compulsory licenses have been particularly applied to pharmaceutical inventions. In addition to the flexibilities that the TRIPS Agreement provides, WTO members have also clarified and reinforced these flexibilities through the Doha Declaration on the TRIPS Agreement and Public Health, as well as by the Waiver Decision of August 2003 and the Amendment Decision of December 2005 and the recent 2022 Ministerial Decision on the TRIPS Agreement to facilitate compulsory licenses for export to the countries in need<sup>17</sup>.

In Africa, apart from direct filings in the country of interest and through the PCT, applicants can apply for patent protection through OAPI and ARIPO. Applications may be filed at the ARIPO office or the national IP office of member States. Patents registered under the Protocol shall have the same effect as a national patent granted by the member States. Applicants may designate the member States where they require patent protection. When applications are filed at the national IP office, the national office shall, within one month, transmit the application to the ARIPO office. The fee for filing an ARIPO patent is from \$1,477 (for 7 designated States), while the fee for filing with OAPI is from \$2,729<sup>18</sup>. With an average annual GDP per capita of 1,250\$, it can easily be seen how the above fee may be prohibitive for SMEs in LDCs.

In the Southeast Asian region (ASEAN), the patent application process varies from country to country. The costs of obtaining a patent in the different Southeast Asian countries can vary quite significantly – with an average of 200 EUR for the ASEAN LDCs<sup>19</sup>. Where translation is required, additional costs of between EUR 11 to EUR 26 per page may be incurred. It is important to note that efforts are underway to create a harmonized system for the registration of patents in the ASEAN region through the ASEAN IPR Action Plan 2016-2025.

On the one hand, enforcing IPRs can be time-consuming and expensive for LDCs to invest in. For applicants, acquiring and defending IPRs can be a complex and costly process. Legal fees, filing fees and the need for expert advice can make it financially challenging for SMEs and individuals to protect their IP.

On the other hand, patent protection could play a significant role in promoting innovation in LDCs. By granting inventors and innovators exclusive rights to their creations for a limited period, it encourages them to invest time, resources, and effort into developing new technologies, products, and processes. Research and Development (R&D) for new technologies that offer a solution to prevailing problems require financial resources, time, and expertise, which might not be viable without the promise of exclusive rights.

In Bangladesh, as an alternative to the bacteriologically-contaminated surface water, residents turned to groundwater, however, the use of groundwater also posed a health risk with the unsafe level of arsenic found in many parts of the country: out of 64 districts, water in 61 of them had arsenic concentration above the safe limit, and up to 77 million people were to “arsenicosis” – a disease caused by chronic arsenic poisoning.

<sup>17</sup> On September 21, 2004, the Zambian Minister of Domestic Trade and Consumer Affairs issued a compulsory license for lamivudine, stavudine and nevirapine (antiretrovirals). The license was granted to Pharco Ltd., a local producer, which will produce a triple fixed-dose combination. A maximum royalty rate of 2.5% applied. <http://www.cptech.org/ip/health/cl/recent-examples.html#Zambia>

<sup>18</sup> <https://ideanav.co.za/sani-aripo-and-oapi-patent-costs/>

<sup>19</sup> [https://intellectual-property-helpdesk.ec.europa.eu/regional-helpdesks/south-east-asia-ip-sme-helpdesk/patent-protection-cost-country-south-east-asia\\_en](https://intellectual-property-helpdesk.ec.europa.eu/regional-helpdesks/south-east-asia-ip-sme-helpdesk/patent-protection-cost-country-south-east-asia_en)

Efforts by the government and non-governmental organizations (NGOs) to mitigate arsenic contamination faced the challenges of developing a cost-efficient method for offering arsenic-free and safe drinking water. A breakthrough came when Dr. Abul Hussam, a Bangladeshi chemist based at George Mason University in the United States, developed a simple and effective filter to remove arsenic from water in 2001. As of 2010, over 1 million people in Bangladesh have been benefitting from Dr. Hussam's "SONO" filtration system. The SONO filter is patented as the "Arsenic Removal Filter" (Patent No. 1003935, 2002) with the Department of Patents, Design and Trade Marks of Bangladesh. Two international patent applications for the combination of active materials in the system have been made under the PCT. Following the successful development of the SONO filter, commercial production of the filter has been initiated by Manob Sakti Unnayan Kendro (MSUK), a non-governmental organization. As of 2010, MSUK has produced about 160,000 SONO filters which are being used in Bangladesh, India, and Nepal. Thousands of these filters have been donated in many districts in Bangladesh. MSUK also provides training on the use of the SONO filter at home and free health care service for arsenicosis patients.

Similarly, in Uganda, an entrepreneur, noticed that many girls were missing school due to the scarcity or non-existence of affordable sanitary products. For girls from low-income backgrounds, the prohibitive price of sanitary products means that many resort to makeshift pads using ineffective and unhygienic materials, such as toilet paper and leaves. Across Africa, it has been estimated that the average schoolgirls will miss 20% of their school year because they lack proper access to menstrual facilities.

This problem propelled the launch of EcoSmart Uganda to produce EcoSmart sanitary pads, which are low-cost, biodegradable in nature, and comfortable to use. The pads are made from locally available sugarcane fibre which makes them commercially viable for women and girls from low-resource environments. As soon as the EcoSmart sanitary pads were finalized in 2018, EcoSmart protected the IP by filing a patent for the process of turning sugar cane fibres into fabric.

With the aid of patents, inventors can prevent others from creating, using, selling, or importing their inventions. This exclusivity enables innovators to commercialise their ideas and make money by selling their products directly to consumers or by licencing the technology to other businesses. Additionally, patent holders gain a competitive edge in the market, as their unique products or processes cannot be easily replicated by competitors. This can lead to increased market share, higher pricing power, and brand recognition.

The ecosystem of innovation as a whole benefits from patent protection. Companies and researchers can more successfully direct their R&D efforts by analysing existing patents to find areas of opportunity and prevent infringement. Patents can be licensed to other companies for use or development. This results in partnerships between innovators and companies encourages the sharing of knowledge and ideas, and provides inventors with a source of income. Patent protection can also attract investments for companies. Patented innovations can make companies more attractive to investors and venture capitalists, as they demonstrate a commitment to innovation and potential for future growth.

From time immemorial, cereal grains have been cultivated for thousands of years and are one of the most significant sources of nutrition for people in every corner of the world. Fonio, predominately grown in West Africa, is an adaptable, hardy grain that is resilient to droughts, and rich in nutrients and protein. Despite the proliferous nature, health benefits, and millennia-long tradition of cultivating this grain, it has become a marginal crop. One of the primary reasons for this decline is that processing the grains is a considerably expensive and time-consuming endeavor. With extremely small and fragile kernels that must be de-husked for processing, the laborious activity of harvesting fonio, and a shift to non-traditional grains in Western Africa, led to undervaluation of the crop. As Western Africa faced nutritional challenges for its populations in the 1990s, Mr. Sanoussi Diakit , an engineer and teacher from Senegal, saw an opportunity to bring a lost crop back to mainstream production, thus providing an integral food source for millions. Drawing on his experience as an engineer, Mr. Diakit  invented a machine that de-husks fonio, making it much faster and easier to process. With the assistance of organizations such as the World Bank and the Agricultural Research for Development (CIRAD) research center in France, the inventor has been able to bring his creation to people in need.

When Mr. Diakit  developed the prototype, he found that using flexible plastic plates to rotate over the fonio grains would remove the husk without crushing the soft interior, which could be easily damaged. Through perfecting his machine via field tests, the inventor was able to get it to process five kilograms of fonio in only eight minutes removing over 99 percent of the husk from the grains. This allows for quicker processing and for farmers to plant more fonio, thus encouraging more cultivation of the traditional crop.

Recognizing the importance of commercializing his invention (not only in Senegal but in other African countries), Mr. Diakité took advantage of the IP system. One goal was to help increase the cultivation and use of fonio, while another was to extend that use beyond his home country. To that end, in 1994, he made a patent application for his invention with the OAPI under Reference #9944. The patent proved to be successful in that it attracted interest and investment from foreign organizations. In 1995, the African Development Foundation, based in Washington, DC, United States saw the stability and potential of the invention and funded the construction of five next-generation prototype fonio husking machines, which was in tandem with a yearlong study of these machines' use and effectiveness.

The protection of patents also contributes to the available body of knowledge. To obtain a patent, inventors must disclose the details of their invention to the public in a patent application and this enables further advancement of current technology by other inventors. Also, while patents provide exclusivity, they are temporary and eventually expire, allowing the knowledge to become part of the public domain. This benefits society as a whole by enabling broader access to ideas and technologies. Furthermore, an increase in the number of domestic filings can be seen as a sign of enhanced local innovative capacity.

It needs to be mentioned that patenting activity increases with the size of the company. SMEs are less likely to hold patents than larger companies. Other systemic issues also contribute to explain this low rate of patentability in LDCs, such as the low participation of women in science, technology, engineering and mathematics<sup>20</sup>. Worldwide, women make up only 35% of total researchers, substantially decreasing the pool of human capital susceptible of filing for patents<sup>21</sup>. Furthermore, patents are well suited for protecting innovations that are clearly specified, easy to copy and have a long life cycle. This typically applies to industrial/manufacturing goods rather than services. When products are complex, characterized by short life cycle or involve low R&D expenses, means other than patents may be more appropriate for firms and entrepreneurs in LDCs to seek protection for IP.

Additionally, one of the requirements for registration is the public disclosure of the invention, but this information is often protected and not available for public use for 20 years. Weaker protection of IPRs can increase access to the information and technology needed for economic growth (Jain, 1996).

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<sup>20</sup> Women's work and entrepreneurial engagement remains restricted by law in many LDCs; 32 LDCs have laws preventing women from working in specific jobs and six LDCs require additional procedures for women to start a business (UNCTAD, 2019).

<sup>21</sup> <https://www.unesco.org/en/days/women-girls-science>.

Table 1: Summary of selected IPRs in LDCs and of key indicators

ECONOMY	PCI 2022	FTRI 2022	GI 2022	Applications for intellectual property protection in LDCs, 2017-2021 (by filing Office)												
				Patents			Utility models			Trademarks			Industrial design			GI
				Average number of filings	Average number of non-resident	Average number of resident	Average number of filings	Average number of non-resident	Average number of resident	Average number of filings	Average number of non-resident	Average number of resident	Average number of filings	Average number of non-resident	Average number of resident	
	(share of total)	(share of total)		(share of total)	(share of total)		(share of total)	(share of total)		(share of total)	(share of total)		(share of total)	(share of total)		
Afghanistan*	25.8	0.08	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Angola*	29.2	0.26	127.0	80.2	n.a.	n.a.	2.2	0.0	2.2	3,988.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
								0,0%	100,0%							
Bangladesh	40.7	0.28	102.0	386.4	324.0	62.4	n.a.	n.a.	n.a.	13,364.6	4,192.0	9,172.6	1,596.8	103.2	1,493.6	15.0
					83.9%	16.1%					31.4%	68.6%		6.5%	93.5%	
Benin*	27.6	0.19	124.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.0**
Bhutan	46.7	0.32	n.a.	8.8	8.4	0.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5.2	2.4	2.8	11.0
					95.5%	4.5%								46.2%	53.8%	
Burkina Faso*	23.9	0.21	120.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Burundi*	24.8	0.12	130.0	7.8	6.4	1.4	0.6	0.0	0.6	274.8	242.0	32.8	1.8	1.4	0.4	n.a.
					82.1%	17.9%		0,0%	100,0%		88.1%	11.9%		77.8%	22.2%	
Cambodia	35.9	0.34	97.0	154.8	154.6	0.2	5.0	5.0	0.0	6,760.4	n.a.	n.a.	n.a.	n.a.	n.a.	18.0
					99.9%	0.1%		100,0%	0,0%							
Central African Republic*	24.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.0**
Chad*	19.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.0**
Comoros	37.0	0,14	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.0**
Democratic Republic of the Congo*	21.8	0.09	n.a.	93.0	61.4	31.6	n.a.	n.a.	n.a.	277.0	93.2	183.8	n.a.	n.a.	n.a.	n.a.
					66.0%	34.0%					33.6%	66.4%				
Djibouti	43.1	0.17	n.a.	3.6	3.0	0.6	n.a.	n.a.	n.a.	138.8	125.4	13.4	1.4	1.2	0.2	n.a.
					83.3%	16.7%					90.3%	9.7%		85.7%	14.3%	
Eritrea*	24.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ethiopia*	30.5	0.15	117.0	35.0	28.4	6.6	216.4	1.2	215.2	2,340.4	963.2	1,377.2	n.a.	n.a.	n.a.	11.0
					81.1%	18.9%		0,6%	99,4%		41.2%	58.8%				
Gambia*	33.9	0.09	n.a.	35.4	35.4	0.0	0.8	0.0	0.8	1,033.4	945.4	88.0	2.2	2.2	0.0	n.a.
					100,0%	0,0%					91.5%	8.5%		100,0%	0,0%	
Guinea*	31.8	0.14	132.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.0**
Guinea-Bissau*	24.8	0.04	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.0**
Haiti	25.2	0.15	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Kiribati*	44.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lao PDR*	36.0	0.25	112.0	31.8	31.0	0.8	4.6	4.4	0.2	1,689.0	1,502.0	187.0	7.2	7.2	0.0	13.0
					97.5%	2.5%		95.7%	4.3%		88.9%	11.1%		100,0%	0,0%	
Lesotho	41.1	0.31	n.a.	1.0	0.0	1.0	n.a.	n.a.	n.a.	640.4	607.4	33.0	n.a.	n.a.	n.a.	n.a.
					0,0%	100,0%					94.8%	5.2%				
Liberia*	31.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Madagascar*	29.0	0.18	106.0	36.4	30.4	6.0	n.a.	n.a.	n.a.	2,096.8	1,263.6	833.2	270.4	9.4	261.0	n.a.
					83.5%	16.5%					60.3%	39.7%		3.5%	96.5%	
Malawi*	18.7	0.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Mali*	21.7	0.19	126.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	7.0
Mauritania*	36.6	0.16	129.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.0**
Mozambique*	29.5	0.16	123.0	46.0	18.6	27.4	12.8	10.2	2.6	3,520.6	2,043.2	1,477.4	73.8	43.8	30.0	9.0
					40.4%	59.6%		79.7%	20.3%		58.0%	42.0%		59.3%	40.7%	
Myanmar	31.8	0.26	116.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Nepal	40.4	0.35	111.0	12.6	8.6	4.0	n.a.	n.a.	n.a.	1,136.4	335.4	801.0	8.0	5.0	3.0	n.a.
					68.3%	31.7%					29.5%	70.5%		62.5%	37.5%	

## REVISITING DEVELOPMENT INNOVATIONS IN LEAST DEVELOPED COUNTRIES

Niger*	16.9	n.a.	125.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.0**
Rwanda*	37.1	0.22	105.0	5.8	1.0	4.8	7.8	1.6	6.2	1,638.0	1,288.6	349.4	34.2	29.0	5.2	n.a.
					17.2%	82.8%		20.5%	79.5%		78.7%	21.3%		84.8%	15.2%	
Sao Tome and Principe	43.1	0.23	n.a.	5.6	5.6	0.0	1.2	1.2	0.0	666.0	654.6	11.4	24.0	24.0	0.0	n.a.
					100.0%	0.0%		100.0%	0.0%		98.3%	1.7%		100.0%	0.0%	
Senegal*	38.7	0.27	99.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.0**
Sierra Leone*	20.1	0.09	n.a.	21.8	21.8	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.8	1.0	1.8	n.a.
					100.0%	0.0%								35.7%	64.3%	
Solomon Islands*	38.2	0.16	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Somalia*	21.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	31.6	28.0	3.6	n.a.	n.a.	n.a.	n.a.
											88.6%	11.4%				
South Sudan*	23.3	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sudan*	25.8	0.08	n.a.	215.6	11.4	204.2	n.a.	n.a.	n.a.	2,755.0	1,475.2	1,279.8	197.8	24.4	173.4	n.a.
					5.3%	94.7%					53.5%	46.5%		12.3%	87.7%	
Timor-Leste	47.6	0.27	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Togo	36.4	0.19	122.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Tuvalu	54.1	n.a.	n.a.	7.6	7.6	0.0	n.a.	n.a.	n.a.	41.4	41.4	0.0	n.a.	n.a.	n.a.	n.a.
					100.0%	0.0%					100.0%	0.0%				
Uganda*	21.4	0.22	119.0	18.0	3.6	14.4	16.0	0.0	16.0	3263.4	1623.8	1639.6	80	1.4	78.6	n.a.
								0.0%	100.0%		49.8%	50.2%		1.8%	98.3%	
United Republic of Tanzania*	31.9	0.27	103.0	50.2	n.a.	n.a.	1.0	0.0	1.0	2,826.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
								0.0%	100.0%							
Yemen*	23.6	0.1	128.0	42.6	11.6	31.0	n.a.	n.a.	n.a.	5,772.8	1,664.4	4,108.4	47.8	3.2	44.6	n.a.
					27.2%	72.8%					28.8%	71.2%		6.7%	93.3%	
Zambia*	32.2	0.18	118.0	24.4	13.4	11.0	n.a.	n.a.	n.a.	3,237.8	1,953.6	1,284.2	59.4	0.0	59.4	n.a.
					54.9%	45.1%					60.3%	39.7%		0.0%	100.0%	
LDC Average	30.9	0.19	n.a.	55.2	36.7	18.0	24.4	2.1	22.3	2,197.0	1,112.7	1,084.3	115.0	12.3	102.7	n.a.
					66.5%	32.7%		8.8%	91.2%		50.6%	49.4%		10.7%	89.3%	

Source: UNCTADStat (2023), UNCTAD (2023) Technology and Innovation Report 2023, WIPO (2022) Global Innovation Index 2022: What is the future of innovation driven growth?, WIPO statistics database (2023). Last updated: July 2023.

Notes: Data not available in the source databases are marked n.a. FTRI stands for Frontier Technology Readiness Index; PCI stands for Productive Capacities Index; GI stands for Geographical Indicators; GII stands for Global Innovation Index.

\* Denotes commodity dependence according to UNCTAD's The State of Commodity Dependence, 2023. A country is considered to be commodity export dependent when more than 60 per cent of its total merchandise exports are composed of commodities.

\*\* OAPI.

Simple average (arithmetic mean) of the filings over the time period 2011-2021.

Foreign filings include those made to regional IP offices.

Data for Geographical indications refer to the total number of Geographical indications in force by product category in the country filing office. They cover the period 2018-2021 only, based on the availability of the dataset.

Data for PCI reflect the 2022 values for the overall composite index; Data for FTRI refer to the values for the 2022 overall index; Data for GII refer to the overall 2022 rank.

### 3.2 Second tier IP protection – Utility Models

Although there is no consensus across different jurisdictions on a definition of a second-tier patent system or “Utility Model” (UM), the term usually refers to a creation that lies below the one that is protectable under patent law. Other laws define the notion as utility innovation, which involves simpler steps than regular inventions. Generally, the main objective of utility model legislation is to offer protection for minor inventions that meet simpler criteria than the ones created for patents and designs.

A UM is a form of protection for innovations that are small, incremental and cumulative in character. They offer a cheap, no-examination protection regime for technical inventions, which would not fulfil the strict patentability criteria. They typically protect the functional aspect of a product. Moreover, UMs usually have lower official fees compared to patents, as the nature of the examination process applied to utility models is less substantive compared to patents. The low innovation requirements of utility model systems allow for protection for minor innovations and prevent competitors from utilizing such creations without due authorization.

Annex 3 contains a list of the laws covering UMs available for all LDCs. It is important to note that 23 out of the 46 LDCs do not have legislation on UMs. This may restrict the domestic range of options available for entrepreneurs to spur local innovation and technology adaptation. Of the countries that are scheduled for graduation, only Lao People's Democratic Republic has a legislation on UM. Of the LDCs that have been found eligible for graduation with the 2021 CDP review, only Cambodia, Senegal and Zambia have adopted a legislation on UMs.

Among LDCs, Ugandan industrial property act No.3 of 2014 provides one of the most detailed definitions of Utility Models: “any form, configuration or disposition of element of some appliance, utensil, tool, electrical and electronic circuitry, instrument, handicraft mechanism or other object or any part of it allowing a better or different functioning, use, or manufacture of the subject matter or that gives some utility, advantage, environmental benefit, saving or technical effect not previously available in Uganda; and includes microorganisms or other self-replicable material, products of genetic resources and herbal as well as nutritional formulations which give new effects” (see Annex 3). The Act resulted in a steady increase in the number of utility model applications in Uganda in the last decade. Yet, Jeju & Kentaro (2011) argue that 95% of the granted titles are not yet commercialized, seemingly due to lack of awareness on the use and benefits of this information resource.

Although the number of applications of utility models among LDCs varies substantially, the average number of applications between 2017 and 2021 for LDCs is 24 per year (see Table 1). When the data was available, many LDCs have an average number of below five utility model applications per year during the period under study. In a likely attempt to increase them, Art. 13 of the AfCFTA IP Protocol calls on State Parties to make available technical assistance to SMEs or individual entrepreneurs, with special consideration for women, youth and persons with disabilities, in various manufacturing fields, to effectively utilize them, subject to their capabilities.

Since knowledge is often based on previous discoveries that need to be applied to the domestic economy, creations with minor inventive steps are of great importance to local development. The importance of utility models is emphasized in the context of developing and least developed countries, mainly for the transfer of technology opportunities offered by such models. Differently from patents, the TRIPS Agreement does not include minimum standards of UM protection.

A large number of LDCs in Africa have not issued laws or regulations on UM protection. In Asia and the Pacific, only Cambodia, Laos and Myanmar have adopted legislation on UM protection. As a result, the number of UM applications from LDCs is considerably low compared to other regions in the world. The number of UM applications within Africa was 660 compared to 7,840 from Oceania and 4,080 from Latin America<sup>22</sup>.

The two main requirements for granting UM protection to an invention across the available LDCs’ legislation are that the invention or creation should be new and industrially applicable, involving a sufficiently inventive step to the invention. UM supporters find them beneficial as they advance the technological capacities of SMEs through local innovation. Cheap and rapid second tier patent regime protection could improve the legal environment for SMEs, especially those engaged in a process of innovation and technological adaptation – through technological learning (Suthersanen, 2006).

Nevertheless, since UMs are not examined on filing in most local systems, no examination and search for novelty and/or obviousness is carried out. This may lead to legal uncertainty and litigation. Consequently, some authors suggest the introduction of a substantive examination of UM applications to improve the quality of UM systems to make it less vulnerable to unfair copying. At the same time, a substantive examination could

affect the affordability advantage of utility model protection, as the costs of novelty reviewing will be endured by the applicant (Ruse-Khan, 2012).

Protection for a UM varies across LDCs. As seen in Annex 3, although the period of seven years from the filing date of the application seems to be mostly applied by several LDCs, some countries provide a longer period of 10 years or a shorter one of five years. Mozambique's Industrial Property Code by decree No. 47 of 2015 provides for the longest period of protection amongst LDCs, namely 15 years.

Regional organizations contributed to the adoption of rules on utility models. All LDC members of OAPI, except for Guinea-Bissau, have adopted rules on UMs only through ratifying the Bangui Agreement without issuing their own domestic regulations on UMs. Regarding LDC members of ARIPO, the majority have issued their own national laws on UM protection beside ratifying the Harare Protocol. Both the Bangui Agreement and the Harare Protocol provide for the same two requirements for granting UM protection, namely novelty and industrial applicability. In addition, the term of protection in both treaties is 10 years from the filing date of the application.

Member states of ARIPO have the autonomy to apply for an IP right granted by ARIPO in their territories. Article 50(1) of the Zambian Industrial Designs Act of 2016 states that a design registered by ARIPO, in accordance with the Harare Protocol, shall have effect in Zambia in a like manner as a design registered in accordance with this Act, except where the registrar communicates to ARIPO a decision, in accordance with the Harare Protocol, that such a registration shall not have legal effect in Zambia. While an OAPI member State does not enjoy such rights and has to abide by OAPI's decision of granting or refusing an industrial property right in their territories (Monteiro & Pereira Cabral, 2018). Such a system offers the applicants wider protection in all member States of the organization making OAPI's system more effective.

The conversion of a UM application to a patent application and vice versa is allowed under the two regional systems. The same option is allowed under the umbrella of other regional organizations such as ASEAN, where the applicant can request the conversion of a patent application into a UM and vice versa based on a priority claim at any time before the grant or refusal of the application.

Moreover, some of the patents and trademarks rules are applied on UMs by the ASEAN common guidelines for substantive examination of industrial designs. For example, rule 1600 states that: "the provisions on "Novelty" and "Prior Art" as provided for in Part 2, Rules 203, 204 and 204.1 of the Regulations for Patents shall apply, mutatis mutandis, to utility models or industrial designs."

Filing through regional organizations like ARIPO and OAPI could be more economically advantageous than applying through domestic systems, as the applicant will not have to apply for protection multiple times in different countries, thereby enduring the financial burden for each application. Such burdens, which affects individual inventors the most do not only include the official fees for the application but also the initial disclosure cost for preparing the application and to fulfill other requirements, for example, some laws require the applicant to submit a translation for the registration and publication of the utility model (Takenaka, 2021).

One promising system among LDCs is Ethiopia's UM protection system regulated by the Inventions, Minor Inventions and Industrial Designs Proclamation No. 123/1995. The regime includes progressive regulation on UM protection. For example, the law states that the UM certificate is granted for a period of five years, which may be renewed for a further five years period provided that proof is furnished that the minor invention is being worked in Ethiopia.

The potential of the Ethiopian regime is reflected in the number of UM applications in Ethiopia. Over the course of the ten years under study (from 2011 to 2021), Ethiopia witnessed the highest average number of UM applications among all LDCs. The average number of applications in the abovementioned years is 216 applications per year as shown in Table 1, with the majority being submitted to domestic offices in Ethiopia. For example, UM1083B1, submitted by Dr. Mulugeta at the Hawassa University in 2022, includes a method of restoring degraded landscape using an ecohydrological green-(semi) grey infrastructure in both urban and as well as rural settings; and hydrologically, both in water-limited as well as water-surplus ecosystems. The method is comprised of at least eight prominent components: runoff-run-on system for restoration of hillsides; wood-terraces to regulate overland flow against soil erosion and sediment transport on farm lands; bamboo-matted plunge-pool system to dissipate flow energy at gully heads; step-pool system to regulate run-off follows at gully beds; guiding bank to reduce active flow widths; groyne to protect gully banks; and vegetated buffer zone as the last line of defense to protect water bodies against pollution and sediment inflows. This innovative system was applied to Hawassa and Chamo rift Valley.

For LDCs, which do not have a UM system, adopting a specifically tailored second-tier protection system, such as UM protection, could complement an existing patent regime (Hewege, 2015). Such systems should consider the relevant domestic circumstances and be designed in light of countries' needs, potentially after national consultations (Ruse-Khan, 2012). UMs thus could offer the best value for money protection to local establishments seeking protection in a domestic market (Harrison, 2023). However, there are very few provisions on UM protection at the international level, and there is no system to facilitate registration in multiple jurisdictions unlike the PCT.

In addition, keeping minor inventions with no protection affects the value of domestic innovation negatively which, consequently, reduces the appetite of foreign investors to invest in local innovation. Since innovation is crucial for production and knowledge processing, no protection for minor inventions could affect a country's ability to convert such knowledge into wealth and social benefits (Mashelkar 2001). Furthermore, second-tier protection systems could help SMEs overcome the challenges they face such as low R&D investment, technological backwardness, low production efficiency and quality of products due to lack of innovation (Wickremasinghe, 2021).

### 3.3 Industrial Designs

Industrial design constitutes the ornamental aspect of an article. As an IPR, industrial designs are also known as design patents to protect the ornamental or aesthetic aspect of a useful article. An industrial design may consist of three-dimensional features, such as the shape of a product, or two-dimensional features, such as patterns, lines, or colour. Protecting the features of a product that make it appealing and commercially valuable ensures that the owner of the design has exclusive rights against unauthorized use by third parties.<sup>23</sup> The owner of a registered design can stop third parties from reproducing, importing, illicitly profiting, selling, or utilizing the registered design for commercial purposes.

Differentiating industrial designs from patents and UMs, it is important to note that a patent or UM protects the technical function of a product, while an industrial design is concerned with the physical and aesthetical aspect of said product.

Industrial design protection is provided for in several national IP regulations and international agreements and conventions. In most countries, an industrial design must be registered to be protected. An industrial design is registrable if it is new or original, has not been published in any country before the filing date or priority date of the application; is applied or can be applied to an article by an industrial process; and is visible in the final article and can be judged solely by the eye.<sup>24</sup> Protection for industrial designs varies from country to country ranging from 5 to 25 years.<sup>25</sup> The WTO TRIPS Agreement provides for protection for a minimum of 10 years.<sup>26</sup> Under the Harare Protocol – through ARIPO the duration of protection is 15 years, except for those member States where the national laws stipulate shorter terms of protection.<sup>27</sup> By the Bangui Agreement – under OAPI, the term of protection is for an initial period of 5 years, which is renewable for two consecutive periods of 5 years – for a total of 15 years.<sup>28</sup>

Under the ARIPO system, pursuant to the Harare Protocol on Patents and Industrial Designs, applicants in the 20 Contracting States can file only one application in the ARIPO Office or the IP office of a Contracting State for protection in designated member States. Under OAPI, through the uniform system, members can apply for the protection of industrial designs in the 17 member States. Similarly, under the ASEAN IPR Action Plan 2016-2025, industrial designs are protected, and an ASEAN Common Guidelines on Industrial Design Examination has been developed to support a convergence of the design examination standards and criteria applied by the ASEAN designs offices.

For developing countries, and LDCs in particular, the impacts of using and protecting industrial design are numerous. Protecting industrial designs can play a crucial role in fostering innovation by providing legal

<sup>23</sup> 'Industrial Design - The African Regional Intellectual Property Organization (ARIPO)' 'Industrial Design - The African Regional Intellectual Property Organization (ARIPO)' <<https://www.aripo.org/ip-services/industrial-design>> accessed 7 August 2023.

<sup>24</sup> Gopikrishnan Mukundan, 'Utility Patents vs Design Patents (a.k.a Industrial Designs)' (ACURA IP, 3 June 2022) <<https://acuraip.com/utility-patents-vs-design-patents-industrial-designs/>> accessed 8 August 2023

<sup>25</sup> 'Regional Workshop on the Use of Utility Models and Industrial Designs for Small and Medium-Sized Enterprises (SMEs) in ARIPO Member States' <[https://www.wipo.int/edocs/mdocs/africa/en/wipo\\_id\\_hre\\_15/wipo\\_id\\_hre\\_15\\_2.pdf](https://www.wipo.int/edocs/mdocs/africa/en/wipo_id_hre_15/wipo_id_hre_15_2.pdf)> accessed 8 August 2023.

<sup>26</sup> Article 26 (3) WTO TRIPS

<sup>27</sup> Section 4(6) Harare Protocol

<sup>28</sup> Article 19 Annex IV Bangui Agreement

safeguards to producers, designers, and creatives against the unlawful use of their original designs. Industrial design protection allows creators the assurance to commit time, energy, and money to create new, original, and inventive designs. As a result, there is a wider variety of products available, which advances technology and aesthetics across several industries. For example, although not an LDC, in Nigeria, this allowed famous fashion brand, House of Deola to devote over 12 years to creating the unique “Komole Kandids” fabric. The fabric combines both lace and Aso-Oke (a hand-woven cloth created and worn by the Yoruba people of West Africa) into one. The colour palette of the fabric is a continuum from pastels to jewel tones, with an iridescent sheen arising from silk “shot-through” Aso-Oke weaves. According to Deola Sagoe, “the fabric elevates the wearer to royalty level, while still keeping her culturally grounded – I believe that this is what true class and elegance is about, shining in the form of a glow rather than a tinselly shine.<sup>29</sup>” “Komole” has undeniably given Aso Oke an invaluable face-lift and identity worldwide and is original from conceptualization to crafting to final creation. The unique fabric is one that deeply imbibes African culture.<sup>30</sup> By registering the style and pattern of the fabric Komole fabrics are protected from imitation.<sup>31</sup> Also, by the uniqueness of the Komole fabric, the House of Deola brand has become one of the most recognizable brands from Nigeria and Africa.

Through industrial design protection market competitiveness is enhanced. Brands will invest in design innovation which will lead to improved brand awareness and increased customer loyalty and sales. Companies can create a distinct identity and improve their brand’s value and reputation in the eyes of consumers by preserving its designs. This was the case in Indonesia where Kebab Turki Baba Rafi (KTBR) utilized industrial design and other IP systems to become the world’s largest kebab chain. KTBR noticed a problem associated with consuming kebabs. In most cases eating kebab was a messy ordeal, with sauce dripping through air pockets and the accidental consumption of its foil wrapping. To resolve this problem, KTBR introduced a sturdy, easy-to-carry cardboard container with a special tab that eliminates these issues. Pulling up on the tab will slowly lift the kebab out of the container, and continual pulls on the tab will pull the kebab up so that it can be easily eaten.

The packaging was registered as an industrial design with the Directorate General of Intellectual Property Rights (DGIPR) of Indonesia in 2009 for the original container shape (DGIPR Registration No. IDD0000025274) and in 2013 for the container with the pull tab (DGIPR Registration No. IDD0000034571). The design has met with great success among consumers and encourages the company to continue improving its products and services. These registrations help protect KTBR’s innovations and ultimately enhance KTBR’s reputation and brand image.<sup>32</sup>

Industrial design protection stimulates research and development. Due to the security of design protection, businesses are more likely to spend money on R&D to produce better and more inventive designs. Industrial design may contribute to the development of environmentally friendly goods and packaging that will help recycle non-biodegradable materials and slow down environmental degradation.

Industrial design protection allows businesses to license their designs to other organizations. This may result in partnerships, collaborations, and knowledge exchange that may further spur innovation across industries.

By preventing the market from being overrun with copies of a select few popular designs, design protection guarantees that consumers have access to a wide range of distinctive and visually beautiful products. This encourages consumer choice and creates a more varied shopping experience. In Panama, when Panama Springs, an SME bottled water company wanted to compete with major international companies, it knew that a unique, eye-pleasing, and distinctly Panamanian bottle design would be necessary. To that end, the company developed a Polyethylene terephthalate (PET) bottle with an original design in terms of both the physical bottle and the product label. As for the design of the bottle itself, the company took subtle cues from a classic wine bottle. The Panama Blue bottle is a fusion between a square bottle and a round bottle. While the bottom portion is square, towards the center the bottle tapers into a slim round shape, with a long neck and clear cap. Furthermore, it is made in such a way that the reflections from the bottle look like those from a glass bottle, not a PET bottle, which evokes a sense of elegance and sophistication. Panama Springs wanted consumers to be able to see the water and just how clear it is, so the company developed the Panama Blue

<sup>29</sup> ‘Komole – House of Deola’ <<http://deolasagoe.co/komole/>> accessed 10 August 2023.

<sup>30</sup> Ibid

<sup>31</sup> Iyinoluwa Oludiyi, ‘Corporate and Commercial Lawyer, Oluwatosin Adegbesan, Shares On Intellectual Property Rights And Fashion Law In Nigeria’ (Mauvelli, 24 June 2020) <<https://mauvelli.com/corporate-and-commercial-lawyer-oluwatosin-adebesan-shares-on-intellectual-property-rights-and-fashion-law-in-nigeria/>> accessed 10 August 2023.

<sup>32</sup> ‘A Brand Wrapped in Success’ <<https://www.wipo.int/ipadvantage/en/details.jsp?id=10358>> accessed 10 August 2023.

bottle to also be especially clear. To secure the Panama Blue bottle design, in 2008 the company applied to have it protected as an industrial design with the Directorate General of the Industrial Property Registry of Panama. The application was approved and registered in 2011.<sup>33</sup>

Furthermore, industrial design protection can help promote and preserve cultural and artistic heritage by encouraging the protection and recognition of traditional designs and craftsmanship. For most African and ASEAN LDCs this is particularly important because they possess unique cultural expressions and identities. In Oman, from time immemorial fragrances and incense have played an important role in Omani culture. Whether it is welcoming a guest, celebrating the birth of a child, or simply heading out of the house, fragrances are part of how Omani people express themselves and are integral to daily life, festivities, and cultural rituals in Oman.

Acutely aware of the importance of fragrances in Omani culture – and locally sourced ingredients such as frankincense, myrrh, and rosewater in particular – in 1983 the Sabco Group, a private holding company owned by the Omani royal family, launched Oman Perfumery LLC, a niche luxury fragrance house known publicly as the House of Amouage. The new perfumery started with two main objectives: first, to sustain the fragrance industry in Oman through the production of modern perfumes that could compete in the international market; and second, to reflect and disseminate the heritage and traditions of Oman through these perfumes. In line with these goals, the company has developed award-winning perfume brands and unique and recognizable bottle designs, which are protected by IP. As a result, Amouage has become one of Oman's most recognized brands and has created some of the most prized perfumes in the world.

Relying on industrial design, the bottles of Amouage perfumes are as iconic as the smell of the fragrance. Amouage is well known for its bottles that have caps shaped like the handle of an Arabian dagger, and which were first used in its Gold line of perfumes. The company has also developed unique bottle designs for its other flagship products. For example, the bottle caps for Jubilation 25 (for women) and Jubilation XXV (for men), a line introduced to coincide with the perfumery's 25<sup>th</sup> anniversary, resemble the dome of the Sultan Qaboos Grand Mosque in Muscat, the capital of Oman. The company has registered its bottles in some of its most important markets.<sup>34</sup>

Similarly, in Myanmar due to the lack of accessibility of modern medicine, traditional medicine plays an important role in the health care in Myanmar. Traditional medicine has been used for generations and is more affordable and easily obtainable – even in rural areas.

FAME, a pharmaceutical company involved in the production of high-quality traditional medicine employed industrial design to protect its medicines from imitation and infringement. By registering its package design with Myanmar's IP office and also using special anti-counterfeiting technology in its packaging, consumers are able to quickly identify FAME's products. Through the employment of industrial design and other IP such as trademark and patent, FAME is one of the largest traditional medicine manufacturers in Myanmar, enjoying international reach with an annual turnover of over US\$2 million.<sup>35</sup>

### 3.4 Trademarks

Trademarks may be words, names, symbols, devices (logos), designs or any other distinctive sign or mark which helps the consumers distinguish one's goods or services from those of others. It is not a surprise to find that trademarks are the single most widely used form of IPR in LDCs, with a total cumulative 26,115 filings over the last ten years, and an average of 2197 filings per year, half of which represented by domestic filings (see Table 1). Through the protection of trademarks, the owner of the trademark has the exclusive right to use the mark to identify goods or services or to authorize a third party to use it in return for payment of royalty. A trademark can take almost any form, as long as it is capable of identifying and distinguishing specific goods or services. Trademarks may take the form of a word, a combination of words, letters, numerals, drawings, symbols, three-dimensional features such as the shape and packaging of goods, non-visible signs such as sounds or fragrances, or colour shades used as distinguishing features – the possibilities are almost limitless.

<sup>33</sup> 'A Design as Clear as Water' <<https://www.wipo.int/ipadvantage/en/details.jsp?id=3697>> accessed 10 August 2023.

<sup>34</sup> Designs, Fragrances, and Sustaining Traditions' <<https://www.wipo.int/ipadvantage/en/details.jsp?id=3711>> accessed 10 August 2023.

<sup>35</sup> 'Providing Affordable Traditional Medicine' <<https://www.wipo.int/ipadvantage/en/details.jsp?id=2586>> accessed 10 August 2023.

Trademarks are protected as IPRs through registration. Generally, the conditions for the filing and registration of trademarks are usually determined by the national IP laws. However, there are notable multilateral international agreements that provide for the protection of trademarks<sup>36</sup>. At the national, regional, or international level, trademarks are protected by registering them at the national/regional/international IP office and paying the required fees. A trademark may be denied registration or invalidated if it infringes rights acquired by third parties in the country where protection is claimed, devoid of any distinctive character, contrary to morality or public order, or of such nature as to deceive the public<sup>37</sup>.

Notwithstanding the foregoing, some marks may be protected without registration. These are known as “Well-Known Trademarks”. A well-known trademark is considered reputable and the general public (persons interested in the goods and service) has knowledge of the trademark in the relevant sector. Well-known trademarks are easy to recognize and are protected regardless of whether they are registered because of their notoriety. The holder of a well-known unregistered trademark may object to the registration of a trademark used for identical or similar goods and services that constitute a reproduction, an imitation, or a translation, and is liable to create confusion<sup>38</sup>. The holder of a well-known trademark may also object to the registration of a trademark used for goods and services that are not similar provided that the use of the trademark would indicate a connection between those goods or services and the interests of the owner of the well-known mark will be damaged<sup>39</sup>.

In Africa, under the ARIPO system, the Banjul Protocol on Marks establishes a trademark application filing system. An applicant may file a single application either at one of the Banjul Protocol Contracting States<sup>40</sup> or directly with the ARIPO Office<sup>41</sup>. In OAPI states, a single registration of a trademark at the OAPI office grants protection in all 17 member States.

In the ASEAN region, there is no common trademark registration system. To protect trademarks, applicants have to file the trademark in each Southeast Asian country they require protection. Alternatively, with the exception of Myanmar, applicants in ASEAN countries that are members of the Madrid Agreement, which established the Madrid System - an international system of registration administered by the International Bureau of the WIPO are able to file a single application to seek trademark protection in multiple Madrid System member States<sup>42</sup>.

At an international level, through the Madrid System administered by WIPO, applicants may file a single international trademark application and pay one set of fees for protection in up to 130 countries. The set of fees are: a basic fee<sup>43</sup>, a complementary fee or individual fee<sup>44</sup> for each Contracting Party designated for protection; and a supplementary fee for each class of goods and services in excess of three. The exact amount an applicant may pay depends on several factors such as the development status of the country of origin, the number of countries protection is being sought, whether the trademark is a mark in colour, whether the trademark is grouped in classes, etc. These variables can be confirmed in the Madrid System Schedule of Fees<sup>45</sup> and calculated using the Madrid System Fee Calculator<sup>46</sup>. Applicants can use the Madrid System if they are nationals of – or have a domicile or business in – any of the 130 countries covered by the Madrid System<sup>47</sup>. The term of protection of trademarks vary depending on the national/regional/international IP law<sup>48</sup>.

<sup>36</sup> Such as the Paris Convention for the Protection of Industrial Property, Madrid Agreement Concerning the International Registration of Marks, Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks, Nice Agreement, Trademark Law Treaty, Singapore Treaty on the Law of Trademarks and the World Trade Organization Agreement on Trade-Related Aspects of Intellectual Property Rights

<sup>37</sup> Article 6 quinquies Paris Convention.

<sup>38</sup> Article 6bis Paris Convention.

<sup>39</sup> Article 16 (3) TRIPS

<sup>40</sup> Botswana, Cape Verde, Eswatini, The Gambia, Lesotho, Liberia, Malawi, Mozambique, Namibia, Sao Tome and Principe, Tanzania, Uganda, and Zimbabwe.

<sup>41</sup> Article 2:1 Banjul Protocol

<sup>42</sup> ‘Guide\_to\_Trademark\_protection\_in\_South\_East\_Asia.Pdf’ <[https://www.mzv.cz/file/4549335/Guide\\_to\\_Trademark\\_protection\\_in\\_South\\_East\\_Asia.pdf](https://www.mzv.cz/file/4549335/Guide_to_Trademark_protection_in_South_East_Asia.pdf)> accessed 23 August 2023.

<sup>43</sup> For applicants from LDCs the basic fee is reduced to 10% of the prescribed amount (rounded to the nearest full figure).

<sup>44</sup> Where the country of origin and the designated contracting state do not have an agreement to receive complementary fee, an individual fee is charged. The amount of the individual fee is fixed by each contracting party concerned.

<sup>45</sup> See <https://www.wipo.int/madrid/en/fees/sched.html>

<sup>46</sup> See <https://madrid.wipo.int/feecalapp/>

<sup>47</sup> ‘WIPO | Madrid – The International Trademark System’ <<https://www.wipo.int/madrid/en/index.html>> accessed 23 August 2023.

<sup>48</sup> Under ARIPO, OAPI, and the Madrid System, the term of protection is 10 years and renewable. Under TRIPS the term of protection is 7 years and renewable.

For LDCs, trademarks play a crucial role in supporting innovation by fostering a competitive marketplace and encouraging businesses to invest in creating and developing new products, services, and technologies. Through trademarks, businesses can create distinctive identities for their goods and services. By creating unique branding, businesses can differentiate themselves and make it easier for customers to recognise and connect their goods and services with a certain industry. To keep their reputation, firms are encouraged to innovate and maintain the quality of their goods.

Research, development, and marketing costs are significant for creating innovative goods or services. Trademarks provide legal protection for these investments which encourages businesses to develop unique and valuable products. Businesses are thus encouraged to continue investing in innovation with the knowledge that their trademarks are legally protected from being usurped by third parties. Trademarks provide legal recourse against unauthorized use of a brand's identity, preventing counterfeit products and unauthorized imitation.

In Myanmar, since the 1970s, the introduction of many new electronic products such as fluorescent lights, refrigerators, and televisions, consistently increased the electricity demand. Many early products ran on direct current (DC) power, but electricity provided to residences and businesses was primarily through alternating current (AC) power. Adapters and converters were available, but most were expensive imports and out of the reach of the average citizen. To meet the expanding demand for affordable adapters, Nibban Electric and Electronics (NEE), a SME based out of Yangon, released its Paho Adapter in 1972. Providing consumers with an affordable and domestically made power supply, the product was a great success. The company followed up on the Paho Adapter with other products, such as voltage transformers, uninterrupted power supplies (used to provide emergency power), generators, inverters (used to convert DC to AC), battery chargers, and television antennas. NEE's reliable and affordable products have made it one of the largest suppliers of television antennas, inverters, and related products in Myanmar.

In Myanmar, NEE's most important asset, its brand name is associated with quality and affordability. NEE engaged in intense research and development to create new products that solve technical problems in Myanmar. As a result of NEE's success, protecting its brand name was paramount. All of the company's products are marketed under the Nibban brand name, which has helped build the company and given it a strong reputation. The Nibban name also stands for products that are made in Myanmar, which gives a more personal association between products and consumers than expensive imports. Before NEE products, most consumers thought more highly of foreign imports, but the Nibban brand name has built up trust and confidence in NEE's domestically produced products.

Through the assistance of trademark protection, NEE has registered the Nibban brand name, and also the Paho Nibban name with the IP Registration Office of Myanmar. These measures ensure that NEE will have legal recourse should third parties attempt to infringe on its trademarks<sup>49</sup>.

Trademarks build consumer trust and loyalty. When consumers have positive experiences with products bearing a particular trademark, they are more likely to become loyal customers. This trust and loyalty create a competitive advantage and drive companies to maintain and enhance their products' quality and features. Trademarks also simplify consumer decision-making by serving as indicators of the source and quality of products. This enables consumers to make informed choices and encourages businesses to maintain the quality that their trademarks represent. This was the case in Lao People's Democratic Republic where Lao Brewery Co. Ltd (LBC), an indigenous brewery company taking advantage of ingenious brewing technology with prime ingredients such as high-quality hops, water, malt, yeast, and Laotian rice created a beer – "Beerlao" with a unique taste.

Since its inception in 1973, Beerlao has achieved a strong international reputation with an annual production capacity of 210 million litres of beer and 21 million litres of drinking water. According to LBC, its market share accounts for nearly 99% of the national beer market in Lao PDR. Beerlao has become one of the most successful export products from Lao PDR and it is currently sold through distributors in more than ten countries including China, Germany, and Thailand.

To promote customer trust, loyalty, and decision-making, LBC has registered trademarks in Lao PDR since 1994. It currently produces and markets three types of beer under the "Beerlao" brand ("Beerlao Lager", "Beerlao Light" and "Beerlao Dark"), one specially-brewed beer under the "LaneXang" brand, locally-brewed "Carlsberg" and a premium quality drinking water under the "Tigerhead" brand. The marketing director asserts

<sup>49</sup> 'Electrifying Economic Development' <<https://www.wipo.int/ipadvantage/en/details.jsp?id=2587>> accessed 24 August 2023.

that trademarks play an important role in the company's marketing and sales processes. The trademarks reaffirm its commitment, quality, and service for its consumers as it proclaims "drink Beerlao, absorb Lao culture". LBC aims to link its brand and quality together. The brand has strengthened the company's sales and consolidated its market<sup>50</sup>.

Trademarks promote healthy market competition. Businesses can set themselves apart from their competitors and they have the chance to defend their differentiating features from imitation by competitors who want to take advantage of their consumer loyalty and goodwill. This differentiation prompts businesses to continuously seek ways to stand out and improve, leading to innovation and the development of new and improved offerings.

Based in Kathmandu, Nepal, Himalayan Bio Trade Private Limited (HBTL) was founded to process and market forest-derived products made by members of the Nepalese rural community. Relying on the country's traditional knowledge, flora, and fauna, indigenous communities living in the hillsides of the country have used the bark of plants such as hemp because of the unique qualities of its fibres to manufacture clothes. Through traditional treatments of these fibres, Nepalese craftswomen have been able to achieve a lustre fabric similar to silk that can be spun into wool and woven on a handloom to produce material for creating clothing and other items.

Desiring to enter the international market, HBTL has worked hard on diversifying and distinguishing its brands, establishing international standards in its production processes, and developing a sound marketing strategy. To reach customers around the world, HBTL has established a strong marketing strategy that includes participation in well-known industry trade fairs and events such as BioFach – a global trade fair for organic goods producers based in Nuremberg, Germany. In addition to marketing its products via collaborations with international fair organizers, the producers' organization has relied on commercialization partnerships with major cosmetics manufacturers such as Aveda – a skincare and hair products producer with a well-established reputation for sourcing materials from marginalized communities.

Aware of the importance of branding and trademark in distinguishing goods in a competitive global market, Aveda registered the trademarks for its Foot Relief and Hand Relief cream via the United States Patent and Trademark Office (USPTO) and its Hand Relief cream at the Office for Harmonization in the Internal Market (OHIM). Both brands' external packaging is made of attractive paper sourced from HBTL.

In part because these trademarked brands have had success in the market, and due to Aveda's product promotion campaigns (which have highlighted the relationship with HBTL), both HBTL and Aveda have benefited financially from the goodwill and product awareness achieved by Aveda's IP protected assets. As Aveda's trademarked products have flourished, the cosmetics company has not only been able to continue sourcing products from rural communities including HBTL; Aveda has also supported the Nepali organization's development by making investments to raise its paper production standards. Due to the alliance with Aveda, HBTL was awarded the Chain of Custody accreditation (which ensures traceability of forest products to their place of origin in aid of sustainability) by the Forest Stewardship Council (FSC)<sup>51</sup>.

Established trademarks are significant assets for businesses and can be licenced or franchised to other businesses. This can result in cooperation and the exchange of knowledge, resources, and technologies, which encourages innovation across industries.

Interestingly, trademarks can also be used to scaleup formality for street vendors through open-source IP, as has been the case in Uganda. Founded in 2016, Uganda's Musana Carts Ltd., aims to improve working conditions and sustainability for street vendors. Often characterized high-levels of informality, many of Uganda's street vendors face long working hours and precarious working conditions due to the risks of charcoal stoves.

Building on the Ugandan word for "sunshine", the Musana cart uses an in-built solar panel to power an eco-friendly stove and a small refrigerator. By removing the need for charcoal burning, the Musana cart produces far less smoke than other food vendor carts, ensuring a cleaner and safer experience for both workers and customers. Other innovations include light bulbs, to allow the vendor to work at night, and phone chargers, so that they can offer mobile money services.

<sup>50</sup> 'International Success of Laotian Beer' <<https://www.wipo.int/ipadvantage/en/details.jsp?id=2514>> accessed 24 August 2023.

<sup>51</sup> 'Promoting Traditional Crafts in the 21st Century' <<https://www.wipo.int/ipadvantage/en/details.jsp?id=2892>> accessed 24 August 2023.

Given challenges to registering and practically enforcing a patent in Uganda, which would be administered through the ARIPO, Musana Carts Ltd., instead, filed a trademark application in Uganda to protect the brand name. Following from the company's original vision and mission of social innovation, the company decided to open source their IP so that vendors across Africa could freely use, modify and share the innovation. The company has also worked with the Kampala Capital City Authority to ensure the formal legal registration of Musana carts, enabling vendors to formalize their businesses<sup>52</sup>.

In Mozambique, Gringo Limited (Gringo) a textile company employed several IP protections such as copyright and trademark to protect its business from usurpers and counterfeiters, and to achieve its aim of being a socially responsible company, leading by example to inspire a new generation of young people in Mozambique through innovative education and training programs, while enhancing the existing entrepreneurial climate in the country and striving to eradicate both hunger and poverty.

To create a strong brand presence, in 2000, the company registered both "Gringo" and "GNG" – an easily recognizable, artistic acronym of the trademark "GRINGO" but with the last "G" in GNG reversed or mirrored – as trademarks in Mozambique, India, Lesotho, Namibia, South Africa, Eswatini and Zambia.

Desiring to extend Gringo's brand recognition into new markets, in 2006 the company filed trademark applications through the Madrid System in Australia, Botswana, China, the Democratic People's Republic of Korea, the European Trademark Office, Kenya, the Republic of Korea, Singapore, the United States of America and Viet Nam. Gringo also obtained copyright certificates in Mozambique for its slogans, symbols, and publicity sentences. Gringo has successfully exploited IP systems in both Mozambique and other countries to establish a strong IP strategy for the company. Gringo has also benefitted from the WIPO LDC policy regarding international registration by paying only ten percent of the registration fees for the trademarks filed through the Madrid System. The story of Gringo clearly illustrates how a small to medium-sized enterprise can leverage IPRs to its advantage.<sup>53</sup>

Lastly, Ethiopia's soleRebels company (originally created in 2005) successfully registered a trademark for soleRebels in 2010 in the United States and another one in 2013 in the European Union, as well as other domain names registration to protect its IP assets. SoleRebels, named after the rebel soldiers who were renowned for wearing sandals made of used car tires, made use of the country's vast number of traditional craftsmen and women and their creativity to produce handmade footwear. Indeed, the company produces trendy and high-quality sandals, boots, slippers for men, women and children. In 2012, SoleRebels created a modern R&D production facility in Addis Ababa. The company's products are handmade with local raw materials (cotton, leather) and, recycled used materials that would otherwise be discarded (tires, rubber tubes), uses manual tools (and thus relying on a minimum electricity) – meaning that its production methods are ecologically sound. It employs locals (mainly women) and has managed to create over 600 jobs outside of Africa through its subsidiaries, notably in Japan (soleRebels Japan).

Furthermore, the company has been successful in branding and marketing via the web. The latter allows it to keep an eye on its stock while making real-time adjustments to supply and demand fluctuations for its products. In 2011, it launched a publicity campaign and competition on its website (called walkNAKED) that encouraged customers to submit photos of the company's products worn by themselves.

Lastly, some challenges in relation to trademark use need to be flagged. It is the case of the cost of registration, which, in some cases, may be prohibitive for LDCs; or the cases related to the registration of trademarks, which are not later 'utilised', resulting in its cancellation after a given period. A trademark should be registered with the genuine intent to use it. The practice of a 'defensive' registration (i.e registering to prevent other people from registering the trademark) is not allowed as it fails to comply with the bona fide intention to use.

### 3.5 Copyrights

According to WIPO, copyright (or author's right) is a legal term used to describe the rights that creators have over their literary and artistic works<sup>54</sup>. Typically, national IP laws will specifically list the kind of works eligible for copyright protection, however, works commonly protected by copyright include literary works such as novels, poems, plays, reference works, newspaper articles; computer programs, databases; films, musical

<sup>52</sup> WIPO (2023). Musana Solar-Powered Electric Food Carts. Accessed 21 August 2023. <https://www.wipo.int/ipadvantage/en/details.jsp?id=12811>

<sup>53</sup> "Branding, Business Ethic and success" <<http://wipo.int>>, accessed on 25 August 2023.

<sup>54</sup> 'Copyright' <<https://www.wipo.int/copyright/en/index.html>> accessed 15 August 2023.

compositions, and choreography; artistic works such as paintings, drawings, photographs, and sculpture; architecture; and advertisements, maps, and technical drawings<sup>55</sup>.

Through copyright protection, authors and creators are granted economic rights over their work to prohibit or authorize the reproduction, public performance, distribution, recording, broadcasting, translation, and adaptation of their work. Authors and creators may also be granted moral rights. Moral rights are based on the French *droit d'auteur* tradition, which sees intellectual creations as an embodiment of the spirit or soul of the creator<sup>56</sup>. Moral rights grant the author the right to claim authorship of the work and the right to object to any distortion, mutilation, or other modification of the work where such action is or would be prejudicial to the honour or reputation of the author. Most countries recognize moral rights, but to varying degrees. Unlike economic rights, in most countries even when the economic right has been transferred, the author's moral rights cannot be waived, licensed or transferred to someone else as they are personal to the author. However, moral rights may pass on to the heirs of the author<sup>57</sup>.

Copyright gives the author or creator of a work exclusive rights over his/her work for a period of time depending on the country. For most works, and in most countries, protection of economic rights lasts for the lifetime of the author plus an additional period of at least 50 -70 years depending on the country<sup>58</sup>. Additionally, if there are multiple creators, the term of protection is determined as of the passing of the final living creator. After a work's copyright protection has ended, it enters into the public domain and anyone can legally use or reference the work without permission.

Copyright protects the author's form of expression. Copyright does not preclude others from using ideas, procedures, operational methods, and pure mathematical notions of the author rather it prevents others from copying the author's individual expression without his/her consent. A work has to be original to be protected by copyright. An original work is one that "originates" from the creator, meaning it was independently produced and was not a copy of another person's work or of anything in the public domain<sup>59</sup>. Also, the work can be fixed on some material form such as written on paper, stored on a disk, painted on canvas, or recorded on tape. In addition, in most countries, copyright protection is granted automatically and there is no need for registration of the work. Computer programs and other types of software, including mobile apps, websites, and website contents are protected as literary works for copyright purposes. As such, they are protected automatically as soon as they are created and do not need to be formally registered. Due to the unique character of the internet, and its accessibility, some creators of digital copyrights now use a range of digital technologies to protect their works against infringement. Digital rights management (DRM) is a way to protect copyrights for digital media. This approach includes the use of technologies that limit the copying and use of copyrighted works and proprietary software. DRM safeguards against any unauthorized modification of a work, they can limit the number of copies that can be made of a work and the devices on which it can be enjoyed<sup>60</sup>.

Although the precise requirements for the protection of copyright are provided for by national IP laws, there are some international agreements and conventions that provide for the protection of copyright. Key in this regard are the Berne Convention for the Protection of Literary and Artistic Works (Berne Convention), the Universal Copyright Convention, the Beijing Treaty on Audiovisual Performances, the Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organization, the WTO TRIPS, the WIPO Copyright Treaty, and the WIPO Performances and Phonograms Treaty.

The Berne Convention is one of the most prominent international conventions on copyrights. It deals with the protection of works and the rights of their authors. It contains a series of provisions determining the minimum

<sup>55</sup> Ibid.

<sup>56</sup> 'Creative\_Expression\_SA.Pdf' <[https://www.wipo.int/export/sites/www/sme/en/documents/guides/customization/creative\\_expression\\_sa.pdf](https://www.wipo.int/export/sites/www/sme/en/documents/guides/customization/creative_expression_sa.pdf)> accessed 16 August 2023.

<sup>57</sup> Most signatories to the Berne Convention such the European Union, OAPI member States, ASEAN members through their copyright laws provide for moral rights and the ability to pass on moral rights to the heirs of the author. However, this is not the case in the USA. The USA protects moral rights through the Visual Artists Rights Act of 1990 (VARA), which is very limited in scope as compared to moral rights protections granted in other countries. VARA only provides moral rights in certain types of visual arts, such as paintings, drawings, prints, sculptures, and still photographs. Moral rights under VARA are effective for the duration of the life of the author, and can be waived, but cannot be assigned, licensed or passed to the heirs of the author

<sup>58</sup> Ibid.

<sup>59</sup> Ibid.

<sup>60</sup> Copyright in the Digital World (wipo.int).

protection to be granted, as well as special provisions available to developing countries and least developed countries (LDCs)<sup>61</sup>. Currently, 38 out of 46 LDCs are signatories<sup>62</sup>. The Convention provides for national treatment on the works of foreigners in the territory of Member States, the protection should not be conditional on compliance with any formality (automatic protection), and the protection should be independent of the existence of protection in the country of origin of the work.

TRIPS enjoins WTO members to comply with Article 1-21 of the Berne Convention, save from Article 6bis which provides for moral rights<sup>63</sup>. TRIPS also provides for Most Favoured Nation treatment on the protection of copyrights for WTO members<sup>64</sup>. Under ASEAN, through the ASEAN IPR Action Plan, ASEAN has created a copyright database of copyright information and case law that is accessible to the public<sup>65</sup>.

The protection of copyright plays a key role in promoting innovation by offering incentives and legal protections to artists and innovators that promote the production and dissemination of creative works. Through copyright protection creators are granted exclusive rights over their work and can monetize their use and distribution by licensing or selling their rights to others. With the possibility of financial rewards, this motivates businesses to expend time, energy, and money on producing original and inventive creations.

Creative sectors including publishing, music, movies, software development, and others are supported by copyright protection. The world economy benefits greatly from these creative and literary sectors, for instance in 2022, Hollywood received earnings of up to USD 5.99 billion<sup>66</sup>, while Bollywood (India's movie industry) made up to USD 2.83 billion<sup>67</sup>. By offering a framework for the licensing, distribution, and monetization of creative works, strong copyright protection protects the viability of these businesses.

This was the case in Ghana, where a software company, the SOFT tribe Limited, grew from a small startup with limited infrastructure housed in its founder's living room to a world-class software development company with global clientele and partners, such as Nestle, Microsoft, and the Ghanaian government. By leveraging copyright protection, the SOFT tribe received authorization through licensing from Microsoft to use its Microsoft Dynamics NAV, a software platform that enables software developers to add layers of functionality on top of the existing platform. This enabled the SOFT tribe to focus on optimizing products based on Microsoft Dynamics NAV's mature foundation. One of the SOFT tribe's recently developed and increasingly used products is its microfinance management software, which is based on the Microsoft Dynamics platform. Based on well-established microcredit approaches to reduce poverty and foster social development, the software enables small-scale lending to promote grassroots enterprises. The company licenses the software to microfinance organizations in the region. By the deal with Microsoft, the copyright of the software and the revenue from the licensing are retained by the SOFT tribe.

The SOFT tribe also has a strategic partnership with BusyInternet, Ghana's largest privately owned and operated ICT center. BusyInternet was set up in 2001 with a unique mission to provide both commercial services and social development through an incubator for small businesses and tech pioneers, combined with immensely popular 24-hour internet café facilities. In a mutually reinforcing partnership, BusyInternet uses the SOFT tribe software. Some 1,800 visitors per day use BusyInternet's facilities<sup>68</sup>.

Copyright protection also encourages creators to make their original work available to the public. Creators can share their works with the public without fear that someone might misuse their work without their permission. As a result, knowledge and information spread more widely, stimulating additional invention and creativity.

Furthermore, copyright protection helps preserve cultural heritage and artistic traditions by ensuring that creators have control over how their works are used and adapted. Copyright protection encourages creators

<sup>61</sup> 'Summary of the Berne Convention for the Protection of Literary and Artistic Works (1886)' <[https://www.wipo.int/treaties/en/ip/berne/summary\\_berne.html](https://www.wipo.int/treaties/en/ip/berne/summary_berne.html)> accessed 16 August 2023.

<sup>62</sup> Angola, Eritrea, Ethiopia, Myanmar, Sierra Leone, Somalia, South Sudan, and Timor-Leste are not signatories to the Berne Convention.

<sup>63</sup> Article 9 TRIPS Agreement.

<sup>64</sup> Article 4 TRIPS Agreement.

<sup>65</sup> Deliverable 10.1 ASEAN IPR Action Plan.

<sup>66</sup> Monali, 'Hollywood Film Industry Statistics & Facts 2023' (New Vision Theatres, 17 March 2023) <<https://www.newvisiontheatres.com/hollywood-film-industry-statistics>> accessed 16 August 2023.

<sup>67</sup> 'India: Film Industry Revenue by Source 2022' (Statista) <<https://www.statista.com/statistics/627512/film-revenue-bystream-india/>> accessed 16 August 2023.

<sup>68</sup> 'Blazing the Technology Trail in West Africa' <<https://www.wipo.int/ipadvantage/en/details.jsp?id=2646>> accessed 16 August 2023.

to add new versions, interpretations, and adaptations to pre-existing works. The practice of building upon earlier achievements advances culture, the arts, and technology.

Copyrighted materials are often created outside of formal enterprises. Some protection is good for creativity, but more protection does not necessarily lead to greater creativity or innovation. In many countries, the challenge with copyright is neither lack of legal protection, nor that existing copyright laws in the countries studied do not comply with international standards. The challenge, therefore, is lack of awareness, enforcement and exploitation of copyright (Ncube et al. 2019). A tailored approach to copyright protection that is best suited to the local conditions and needs is called for. Obviously, there is a need to protect the creativity of the author, while balancing this with the interest of the public, including with respect to access to knowledge and its dissemination.

To simplify the management of those rights, authors can use Collective Management to manage their rights. Generally, these Collective Management Organizations (CMO) are generally NGOs controlled by rightsholders, although some CMOs are private or semi-public, depending on the countries. They negotiate tariffs/conditions, monitor when, where, what works are used, license the use of protected works on behalf of their members, collect fees from users and distribute them to the right holders<sup>69</sup>.

### 3.6 Geographical Indications

Article 22.1 of the WTO TRIPS Agreement defines geographical indications (GIs) as: “indications which identify a good as originating in the territory of a member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin.” Article 22 of TRIPS defines a standard level of protection for all products, and Article 23 provides an enhanced level of protection for GIs for wines and spirits. This type of protection is important to LDCs since some of their agricultural products typically have qualities that derive from their place of production and are influenced by specific local geographical factors.

The “standard level” of protection for all GIs is against the uses of any means, including as a trademark in the designation or presentation of a good that indicates or suggests that the good in question originates in a geographical area other than its true place of origin in a manner that misleads the public about the geographical origin of the good; any use that constitutes an act of unfair competition within the meaning of Article 10bis of the Paris Convention (1967). The enhanced level of protection is against usurpation of the GI names, including when the true origin of the goods is indicated or the GI is used in translation or accompanied by expression such as “kind,” “type,” “style,” “imitation,” or the like. The main difference between the two levels of protection regarding misuses is the need for the basic protection to prove that the consumer is misled by the wrong use of the GI, which means that the consumer knows the indication is a GI, evidence that is difficult to provide when the market is located far from the place of production (Addor & Grazioli, 2002).

Article 22.2 of TRIPS allows countries to determine which form of protection would be appropriate for GIs. In Africa, some countries, such as Kenya and South Africa, protect GIs under trademark legislation while others, such as Morocco and Uganda, have separate legislation for it. Nevertheless, to function as GI, a sign must identify a product as originating in a given place.

In 2017, the African Union adopted the Continental Strategy on Geographical Indications (2018-2023). The strategy recognizes the importance of GIs as a tool for use in sustainable rural development and food security. The exploitation of benefits associated with GIs by local communities is expected to result in economic development especially for women and youth. Furthermore, the recent AfCFTA IP Protocol specifically refers to GI (Art. 9) and on the need to create a database and information portal of registered GI. It further calls for enhanced cooperation on the use of this form of protection amongst members.

The link between the territory and the uniqueness of the product is the distinctive developmental nature of GIs which sets it apart from other IPRs. As emphasized by UNCTAD (2015): “Evidence from the market and literature shows that the promotion and protection of products under GIs may results in higher economics gains, fostering quality production and equitable distribution of profits for LDCs rural communities. GIs encourage the preservation of biodiversity, traditional know-how and natural resources. Leveraging on biological and cultural diversification, the implementation of GIs may represent a unique opportunity to bring together the various players along the value chain, including producers, government authorities and researchers”.

<sup>69</sup> <https://www.wipo.int/copyright/en/management/>

The total number of GIs in force in LDCs is very small. Up to now, only 3 LDCs have ratified the WIPO Agreements (Lisbon Agreement and Geneva Act) – see Annex 1 - which are legal instruments to acquire legal protection for GIs.

Implementation of GI sui generis legal frameworks in Asia started in the 2000s, with some legislation later being amended. There is no common legal framework for the protection of GIs at ASEAN regional scale, even less at Asian scale. In compliance with the TRIPS Agreement in which the choice of the legal means for the protection of GIs are left to each country to decide, each country in ASEAN has its own domestic GI protection framework. Following the 1995 ASEAN Framework Agreement on Intellectual Property Cooperation, Asian and ASEAN countries have been actively involved in identifying and registering GIs as a tool to expand their presence on domestic and international markets. In 2021, out of the more than 400 GIs that were registered in ASEAN countries, only 15 GIs originated from ASEAN LDCs.

GIs are mainly awarded either for raw materials and non-processed agricultural products that are blended and/or processed in a different area, usually in a different country (coffee, tea, spices, etc.); or GIs are products that are not yet labelled and/or packaged (fruit, etc.); or GIs are handicraft goods that are strongly declining in the market.

The intrinsic characteristics of GIs is in their link with a locality and their collective management. GIs can give rise to a virtuous cycle whereby producers effectively manage and maintain the natural environment, which defines the quality and characteristics of their products. Therefore, GIs and GI policies have an important role to play in achieving sustainable natural resource management.

LDCs have the opportunity to protect their high-quality (agricultural, handicrafts) products based on geographical origin, such as: Kampot pepper from Cambodia; Ziama-Macenta robusta coffee from Guinea; cotton loincloths made by the Manjack ethnic group from Senegal and Guinea-Bissau; local leather shoes from the town of Ngaye Mekhe (Senegal); bark cloth from Uganda; and Kovié rice from Togo, amongst others.

Domestic and regional markets represent an important asset for GI product development. First, the origin-linked quality of traditional products is recognized by domestic consumers who are willing to pay a higher price for them. Demand for local products is growing as both the urban population and the population in general are increasing in Africa. More specifically, there is a growing middle class in LDCs and in Africa (the fastest growing globally) that taps into the increasing domestic market for quality goods and particularly agricultural products.

Despite these opportunities, it needs to be remembered that LDCs face considerable challenges when implementing GIs. This is due to their weak institutional structures, and lack of regulatory frameworks; incomplete or unavailable national GI frameworks; lack of conformity assessment, and enforcement mechanisms for GI protection and monitoring. Furthermore, barriers to market access, including Sanitary and phytosanitary (SPS) certifications, may prevent protected products from entering promising foreign markets. Transportation and other logistics related challenges can limit the potential for producers in developing economies of actually getting their goods to market and in the hands of consumers. A lack of fundamental productive capacities in energy, ICT, transport, etc. undermine the development potential of these products.

Where certification bodies exist, certification costs are an important issue, whether for producers and private certification or for public authorities in the case of public systems. Third party certification is necessary for export markets, but other systems may be designed for small quantities of GI products sold on local markets. An appropriate system adapted to local conditions, based on simple tools and methods with an internal, social or participative guarantee system (PGS) should be designed and officially recognized. Both in Africa and worldwide, PGS have been developed essentially for organic products on local markets; a specific project could be developed to examine the feasibility for GIs.

As GI processes are quite recent, especially in African LDCs, the main challenge policymakers are facing is the lack of awareness of all the stakeholders, whether value chain actors, authorities, or consumers. GI strategies can be complex, since they require both multidisciplinary approaches (agronomic, technological, economic, legal, etc.) and multi-stakeholder (private, public) approaches at each stage of the process (identification of potentialities, qualification and definition of rules, marketing, control, and certification). This is why structured policies are necessary to promote GI specifically as a tool for sustainable development, to build up the capacity of all value chain stakeholders and to inform consumers. This is particularly crucial in the context of smallholder producers lacking technical capacities and public authorities not trained in using GIs.

As registering GI is a time-consuming process, LDCs' communities may benefit from the expertise and support of civil society for the registration process. This has been the case of the filing of the GI for Madd de Casamance (a local berry) in Senegal, which started in 2017. Madd de Casamance is renowned for its flavour and medicinal properties. Civil society (eg. Economie Territoires et développement services) worked with local women to add value to the goods derived from the berries harvested in the region. In 2019, the Association called Association pour la Protection et la Promotion de l'indication géographique Madd de Casamance brought together all engaged in the harvest, production and distribution of the fruit from the region. The association also aims at implementing a quality assurance scheme to ensure that the berries meet the required standards. It further aims at boosting new markets for the sale of this unique product. Local producers, mostly women involved in the processing and youth involved in the harvesting, throughout their GI registration process have ensured that their practices are governed by sustainability considerations to keep the original forest ecosystem<sup>70</sup>.

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<sup>70</sup> [https://www.cirad.fr/les-actualites-du-cirad/actualites/2022/indication-geographique-madd-de-casamance#:~:text=Le%20madd%20\(Saba%20senegalensis\)%20est,%C3%A9cosyst%C3%A8mes%20forestiers%20de%20la%20Casamance.](https://www.cirad.fr/les-actualites-du-cirad/actualites/2022/indication-geographique-madd-de-casamance#:~:text=Le%20madd%20(Saba%20senegalensis)%20est,%C3%A9cosyst%C3%A8mes%20forestiers%20de%20la%20Casamance.)

# IV

## SELECTED SECTOR-SPECIFIC IPRs PROTECTION

#### 4.1 Mining

Between 2018 and 2020, 78% of LDCs were classified as commodity dependent, given that more than 60% of their exports is composed of primary products. In 2021, the vast majority of the exports from LDCs were composed of ores, metals and fuels. Some LDCs have large deposits of energy transition minerals, namely cobalt for Democratic Republic of the Congo, copper for Lao PDR and Bhutan, graphite for Mozambique and bauxite for Guinea (UNCTAD, 2022a). To take advantage of potential future mining revenues, and encourage investments in new projects, LDCs could consider a new role for innovation in their development strategies. According to Lèbre et al. (2020), resource extraction and processing accounts for 50% of global climate change emissions. Furthermore, the mining sector provides jobs to women, they account for some 30% of total workforce, mostly in informal artisanal and small-scale mining.

Innovation is a paramount tool to address the incessant challenges, such as climate change, facing an essential industry like mining. Innovation is mainly generated from firms working in the mining sector to overcome major efficiency, productivity and sustainability challenges, allowing them to build a competitive advantage, which could indirectly benefit also the small-scale mining (Ortega & Elton, 2019). Policies aimed at targeting innovation for on-site value addition, by transforming the minerals domestically or through regional value chains - including through learning by doing- could be considered as part of LDCs' diversification strategies. However, other forms of innovation incentives are available. This section does not aim to be exhaustive but attempts to provide some examples of how IPRs could be used for the above purpose.

Since IP protection is important to retain the acquired advantages, especially for patents, in the mining sector, there has been exponential growth in such protection in the last decade compared to the period from 1970 to 2000. According to Daly et al. (2019), the number of patent applications in the mining sector in the five years between 2014-2019 exceeded the accumulated number of applications over the previous 30 years, i.e. 1970-2000.

As previously argued, patents give an exclusive right for an inventor to exclude others from exploiting the invention for a specific period of time, with the invention being "a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem", with the requirement of publishing the patent application and disclosing the invention. Consequently, patents could be used as a proxy for innovation and the number of patent applications usually reflects the level of technological development in a given country, along with other indicators such as FDI.

However, the technological impact of FDI in the mining industry is less visible because mining is perceived as having weak technological and innovative fingerprint in the host country carrying out mining activities (Casella & Formenti, 2019). This is mainly because the discovery and development of new mining products is rare, while the discovery of new mines or deposits remains the main element of the mining activity (Daly et al., 2019). Nonetheless, one of the main tools that could create a link between mining, FDI and technological development in the host state is the ability to register mining patents and enforce patents already owned by Multi-National Enterprises (MNEs) in the host country.

UMs have been utilized in the mining sector since the beginning of the millennium, with a big increase starting from 2004, leading them to account for 42% of total IPRs in mining in 2015 (Daly et al. 2019).

As argued by Fernandez (2021) and Daly et al. (2019), research papers on mining patents provide several classifications for specific fields. Several categories have witnessed an increase in numbers of patent applications, notably those related to transport (Dionori & Zehtabchi, 2019) and mining operation and exploration (Daly et al. 2019). Furthermore, patents applied by mining firms are surprisingly not related to mining technologies, but rather to the fields of energy, electrical machinery and apparatus (Daly, et al. 2022). Studies have emphasized the reliance on IP instruments by mining companies pursuing an internationalization strategy to secure protection in several states (Valacchi et al. 2019).

In LDCs, high priority was given to the development of the mining sector to reduce poverty and improve living standards (Belem, 2009). Fernandez (2021) looked at the number of patents and utility models applied across twelve different mining categories between 1970-2018 and clearly highlighted huge gaps: Africa witnessed only seven UMs in four categories: three in mining operation, one in transport, two in exploration and one in mining. This stands in comparison to Asia, which was home to 199,264 UMs; to Europe with 21,835 UMs; Latin America with 1,805; and North America with 1,691. Similarly, for patents, only 4,494 applications were submitted in Africa compared to 295,747 in Asia, 185,953 in Europe, 5,972 in Latin America, and 85,574 in North America.

By looking at the example of one mineral-rich country, Chile, some valuable lessons can be learned for LDCs. Chile is number one on the list of top 10 countries in the world in terms of copper reserves and output (Democratic Republic of the Congo and Zambia are also on the list). Moreover, the mining sector in Chile is among the highest contributors to the number of patents filed, together with the chemical and pharmaceutical sectors. Patenting is considered a way of spurring innovation and solving some of the challenges affecting productivity gains (Ortega & Elton, 2019).

Despite the importance of the mining sector to the Chilean economy, the industry shows a significant lag in developing local knowledge compared to other countries, such as Australia (Meller & Parodi, 2017). The majority of mining-related patents filed in the Chilean patent office are usually filed by non-residents. Between 2009-2017, 1288 patents were filed in the office from non-residents compared to 443 patents filed by residents (Ortega & Elton, 2019).

The Chilean government launched public-private programs to support innovation among mining suppliers, the most famous one is the World Class Suppliers (WCS) program in the late 2000s to promote the technological development of Knowledge-Intensive Mining Suppliers (KIMS) through increasing demand for innovations and promoting internationalization. The program was the first in a series of public-private programs implemented in Chile to enhance technological capabilities in the mining sector. The latter was achieved by linking large mining companies that are aware of their operational problems, to potential suppliers which may have the capacity to propose solutions. Indeed, the setting up of KIMS, which are innovative and technologically specialized firms working to develop solutions at the mining industry technological frontier, led to a surge in the number of patents applied for the mining sector (Stubrin, 2018; Izuka et al. 2022).

In addition, the Chilean economic development agency (CORFO) launched programs that provides funding for innovation in the mining sector based on committee meetings of major stakeholders in the industry (mining companies, suppliers and academia). All beneficiaries of the CORFO-administered innovation programs are required to have IP management strategies, and to protect the available technologies using IP instruments. An approach adopted as a result of the fact that many technologies in the mining industry have not been IP protected, mainly because of “a lack of awareness of IP protection mechanism, and the myth about their costs and complexity” (Ortega & Elton, 2019: 56).

A lesson learned from the Chilean example is that mining cannot power growth for developing countries and LDCs without strengthening the domestic system that produces the required advanced knowledge for mining operations (Izuka et al. 2022). Also, funding to look for the best technological solution to the pressing problems mining companies were facing was made available through Public-Private Partnerships, as well as specific training on IPRs.

Patents are not the only type of IPRs that countries can use to protect their mining and minerals. Trademarks are widely used too. For example, Vientiane Steel Industry Co., Ltd. (VSI) registered its “VSI” acronym nationally soon after the company was formed in 1994. The construction of the first factory of Vientiane Steel began in 1996 and went into production by the end of 1997. In 1999, two new production plants were established – for manufacturing “forming steel” (a kind of high tensile strength steel), and for roofing tiles, with production capacities of 40,000 tons and 250,000 pieces annually, respectively. The expansion of VSI led the company to combine all the segments of its business by forming the VSI Group in 2002.

The VSI mark is embedded in every steel product from the industry. The tiles produced by the VSI Group bear the “Lao Tile VTP Twin Elephants”, which is registered with the Lao Division of Intellectual Property (DIP). An additional trademark – “VSP” – is being considered for the steel bars. However, no international applications have yet been made.

The VSI trademark has become a successful brand name in the domestic market. The company’s sales meet as much as 60 percent of the local demand. VSI steel products are renowned for their quality and also enjoy certain price advantages over imported products. Consequently, consumers looking to buy steel seek the VSI mark to ensure that they are purchasing a trustworthy product.

In addition to the trademark, VSI has successfully maintained the quality of its products; VSI is the only steel company in Lao People’s Democratic Republic that produces A-grade steel. Consequently, important construction projects such as government offices, universities, and big hotels always seek to use VSI products. In 2002, VSI was awarded the National Standard Certification from the DISM for its products, and in 2007 VSI secured the ISO-9001 certification.<sup>71</sup>

<sup>71</sup> “Commitment to quality Toward the Creation of a Brand name”, <<http://wipo.int>> , accessed a 25 August 2023.

Another example of how IPRs have been used comprehensively to spur a firm's development is the case of Petroleum Nasional Berhad (PETRONAS) in Malaysia. It was incorporated in 1974 under the Companies Act (1965) and is wholly owned by the Malaysian government. The company and its subsidiaries are widely engaged in the oil and gas sector, including in the exploration and production of oil and gas, oil refining, the marketing and distribution of petroleum products, trading, gas processing and liquefaction, gas transmission pipeline network operations, the marketing of liquefied natural gas, petrochemical manufacturing and marketing, shipping, and property investment, among others, including R&D activities. As a State-owned enterprise, PETRONAS comprises 103 wholly-owned subsidiaries, with 19 partially-owned outfits and 55 associated companies. It employs nearly 40,000 people and has been ranked among the FORTUNE Global 500 largest corporations of the world.

Intellectual property management has played a significant role in the growth and business development of PETRONAS. The company has a separate IP division within its legal department, which aims to protect the corporate interest against potential competitors, as well as prevent IP infringement. The company also views IP as a potential revenue stream that can be leveraged through selling or licensing IP assets. Moreover, IP protection is seen as favorable to attracting investment. Patents, new designs, and new technology are embraced as they enhance the corporate brand.

The company utilizes a number of IP protections, both domestically and those that are registered abroad. The company has more than 200 trademarks spread out over 65 countries. Domestically, PETRONAS has registered 110 trademark applications in 45 classes with the Malaysia Intellectual Property Office (MyIPO). PETRONAS carefully monitors its name and its use across internet websites. It therefore carries out domain name searches to monitor possible infringement. The company has successfully protected its IP against infringement from US and Switzerland through the use of arbitration and mediation services from the WIPO Arbitration and Mediation Center.<sup>72</sup>

From these examples, it appears quite clear that a multi-pronged approach to intellectual property protection, including via domestic and international filings, and through the utilization of various methods of IP can be helpful to alleviate risks. Intellectual property protection can provide forward looking benefits for companies including enhanced investment potential, reputational strengthening and potential revenue streams/assets. But, IP protection should not be an afterthought for companies and/or for countries. Dedicated departments and skilled professionals should be engaged (at the appropriate moment and scale) to fully benefit from IP protection and its development potential.

## 4.2 Pharmaceuticals

A lot has been written already on this sector, including on LDCs (Cockburn, 2009; Motari et al. 2021). This section therefore only attempts to focus on some of the issues arguably considered important for LDCs.

The WTO Doha Declaration on the TRIPS Agreement and Public Health, of 2001, states that the TRIPS agreement can and should be interpreted and implemented in a manner supportive of WTO members' right to protect public health and, in particular, to promote access to medicines for all (Art. 4). As highlighted in Section 2, health-related flexibilities exist and are recognised in the above agreement<sup>73</sup>.

Compulsory licences for the production of medicines became important with the COVID-19 crisis. A compulsory license is issued by a government authority or a court to make certain use of a patented invention without the consent of the patent holder. This mechanism is generally present in most patent laws, but TRIPS rules restrict compulsory licences to serve mainly the domestic market, unless they are issued to deal with anti-competitive behaviour. The Doha Declaration (2001) recognized that this restriction on compulsory licensing could severely hamper its use by countries, LDCs in primis, with insufficient or no manufacturing capacities in the pharmaceutical sector. The Declaration amended the TRIPS Agreement to add a 'trade-related' compulsory licence tailored for the export of medicines to countries in need. This mechanism was sometimes termed the 'paragraph 6 system', from its origins in the Doha Declaration<sup>74</sup>.

<sup>72</sup> "Creation of a Brand Name", <<http://wipo.int>>, accessed on 25 August 2023.

<sup>73</sup> Any LDC may submit a duly motivated request to the TRIPS Council for further extension of the transition period (art 66.1TRIPS).

<sup>74</sup> In July 2007, Rwanda notified the WTO that it intended to import a fixed dose combination antiretroviral drug manufactured by the Canadian generic pharmaceutical manufacturer Apotex. In September 2007, Apotex was granted a compulsory licence from the Canadian authorities. Between 2008 and 2010 Apotex exported three batches of the antiretroviral medicine from Canada to Rwanda using this scheme. It was a lengthy and cumbersome process, and several commentaries have questioned the efficiency and sustainability of the scheme. india/> accessed 16 August 2023.

It needs to be reminded that patents may be filed not only during the production process of a vaccine but also during its development stage. UNCTAD (2022c) argued that if clinical trial data is subject to IPRs, it may take more time for a subsequent producer to obtain domestic approval. IPRs incentivize the innovation of new technology yet may also hinder the production of vaccines by companies in developing countries. Both international trade and investment agreements have compulsory licensing provisions to override intellectual property rights in an emergency. However, in the past two years, no company has been granted a compulsory license to make a coronavirus vaccine, mostly due to the complexity of applying for one, highlighting the need to further enhance and broaden international cooperation in dealing with emergencies. The COVID-19 pandemic has clearly shown that limited pre-existing capacity and a lack of government resources are other factors that have constrained developing countries in the production of vaccines.

Interestingly, the AfCFTA IP Protocol states that ‘within three years from the coming into force of this Protocol, ratify the 2005 Protocol Amending the WTO TRIPS in relation to public health and provide for procedures that enable the export of pharmaceutical products produced under the compulsory license for the benefit of State Parties that have limited or no domestic pharmaceutical manufacturing capacity’ (Art. 12). Furthermore, Art. 21 adds that “State Parties shall ensure coherence among national policies on intellectual property rights, innovation, trade, industry and health to promote local production of pharmaceutical products, and vaccines, diagnostics, therapeutics and other healthcare essential tools”.

This section continues by offering a successful example of how domestic manufacturing capacities have been developed in the pharmaceutical sector using Bangladesh as a case study, as it one of the few LDCs with strong pharmaceutical manufacturing capabilities. Its experience may therefore be of help for all other LDCs. Bangladesh is the only LDC that meets nearly 98 % of its domestic demand for pharmaceutical products, with a market size of approximately USD 3 billion. Bangladesh pharmaceutical products are exported to approximately 150 countries and generated USD 169 million in fiscal year 2020-2021<sup>75</sup>. With an annual two-digit growth rate, the Bangladesh pharmaceutical industry is now heading towards self-sufficiency in meeting local demand. A positive aspect is low market concentration – there are more than 300 small, medium, and large enterprises operating in the country producing pharmaceuticals, although the top ten producers make up approximately two-thirds of the market<sup>76</sup>.

Bangladesh mostly produces (off-patent) generic drugs (about 80%) and a portion of on-patent medicines (but patented elsewhere), mostly over the counter products (Begum, 2022). As an LDC, Bangladesh can still produce generic versions of patented pharmaceuticals. This way the country can serve the pharmaceutical needs of poorer countries with no or low manufacturing capacity by supplying cheap generic versions of patented drugs (Martin, 2006). According to the Bangladesh Association of Pharmaceutical Industries (BAPI), more than 1,200 pharmaceutical products have been registered for export in Bangladesh in the last two years<sup>77</sup>.

Data from the Bangladesh Export Promotion Bureau show that in the 2018-2019 fiscal year, Bangladesh exported medicines to a total of 147 countries, a total of USD 130 million worth of products. The majority of exports (60%) are directed to developing (and less regulated) markets in Africa and Asia, including Myanmar, Sri Lanka, Philippines, Vietnam, Afghanistan, and Kenya. The remaining 40% of exports are directed to developed countries such as the US, Canada, Germany, and Australia.

Bangladesh is importing most of its active pharmaceutical ingredients (API) from third countries, mostly India and France. Also, it appears to be the largest importer of API in the world<sup>78</sup>. The Bangladeshi Government has created export and fiscal incentives to encourage domestic and foreign companies to produce API in Bangladesh<sup>79</sup>. An API Park was created to this effect. Even though it is not working at full capacity yet<sup>80</sup>, this is a step in the right direction. As part of its holistic development strategy, the country needs to build domestic productive capacities to enable it to gradually produce all the necessary pharmaceutical inputs and become less dependent on imports.

Bangladesh is in a unique situation. Its market power and industrial capacity to produce high-quality medicines poses an opportunity to take advantage of the transition period before its graduation from LDC category

<sup>75</sup> US International Trade Administration (2022).

<sup>76</sup> Ibid

<sup>77</sup> <https://bida.gov.bd/pharma-api#section1>.

<sup>78</sup> <https://www.volza.com/p/pharma-api/import/import-in-bangladesh/>

<sup>79</sup> Tax holidays have been granted to those companies producing API in Bangladesh until 2032. <https://bida.gov.bd>

<sup>80</sup> Begum, 2022.

(scheduled for 2026), when it will be required to fully adopt TRIPS Agreement for pharmaceuticals. In the absence of retroactive application (TRIPS Art. 70), the 20 per cent production of patented drugs will probably stay ‘locally off-patents’, even after graduation.

As stated by a pharmaceutical industry expert<sup>81</sup> in Bangladesh, “medicine price in Bangladesh is among the lowest in the world and that has been possible because the country has much competitive generic drug skills, and it doesn’t have to pay royalty to innovators for producing patented medicines<sup>82</sup>. This will change with graduation from the LDC category. It follows that the country has an interest in further developing its industrial capabilities and invest in generic drugs now. According to Begum (2022), drugs worth US \$ 250 billion are coming off patents in 2023. This opens up new investment opportunities in this sector, which should be explored as a priority. It is worth recalling that countries are allowed to seek an extension of the transition period to the Council for TRIPS, provided that it is duly motivated, as per Art. 66.1.

In Bangladesh, existing pharmaceutical regulations and patent law impose certain limitations on pharmaceuticals. For instance, pharmaceutical patents (both product and process) are prohibited in Bangladesh until expiration of the pharmaceutical patent waivers under the TRIPS Agreement. Table 2 below shows that certain changes regarding IP issues need to be in place as part of the moves towards TRIPS compliance. Bangladesh has made substantial progress in promoting local production of essential drugs by way of prohibiting pharmaceutical patents and introducing restrictions on the import and production of drugs by multinational corporations that are produced locally.

**Table 2: Changes required for TRIPS-compliant pharmaceutical regulation in Bangladesh**

IP Issues	Existing pharmaceutical regulation in Bangladesh	Changes needed for TRIPS compliance
<b>Product patent for pharmaceuticals</b>	Currently, pharmaceutical patents are prohibited	Both process and product patents for pharmaceuticals need to be introduced
<b>Duration of patent protection</b>	Currently, patent law provides protection for only 16 years	Protection should be extended to 20 years

Source: Adapted from Azam (2017).

Upon graduation, Bangladesh needs to introduce pharmaceutical patents and the above-mentioned changes need to be made to existing pharmaceutical regulations and patent law. These changes may have negative effects on the pricing of medicines in the country.

Based on a survey conducted by Azam (2017), several large-scale companies in Bangladesh started basic research, with a view to prepare for the post-TRIPS product patent regime. Some SMEs mentioned that they are considering utilizing traditional knowledge to make countryspecific traditional medicines as an alternative in a post-TRIPS regime.

It needs not to be forgotten that, even after graduation, developing countries can utilize the TRIPS flexibilities that are incorporated in their national laws to promote access to affordable medicines, such as compulsory licenses, parallel importation, and “Bolar provision”. This is a strategy aimed at developing parallel imports, whose prices could be cheaper, could be explored at the national, regional and sub-regional level.

As the pharmaceutical sector strongly relies on technology, it needs to be mentioned that technology transfer is ineffective in the absence of intra-industry productivity spillovers, support for R&D, and the capacity to absorb and utilize the technology (UNCTAD, 2014). Although technology transfer is heavily constrained in sectors with high value intellectual property, such as pharmaceuticals, innovative policies could diminish the distortion caused by patent misuse and practices that impede trade (UNCTAD, 2018c). The pooling of resources and specialized skills through special mechanisms, including those under the auspices of the WHO and WTO, could help to de-link R&D costs in new medicines for diseases affecting populations in LDCs.

<sup>81</sup> Azam (2017).

<sup>82</sup> For example, cholesterol lowering drug Crestor 10mg (rosuvastatin) tablet costs around \$ 7.25 in the US versus a comparable Bangladeshi generic price of \$ 0.25 while diabetes drug Januvia 50mg (sitagliptin) is priced at \$ 11.25 against the local generic price of \$ 0.25. Bangladesh has introduced the generic version of revolutionary hepatitis C drugs Sovaldi (sofosbuvir) and Harvoni (sofosbuvir+ledipasvir) which are available locally at \$ 6.5 and \$ 13 per tablet compared to the originator brands at USD 1,000 and USD 1,125 respectively.”

Developed countries “shall provide incentives to enterprises and institutions (...) for the purpose of promoting and encouraging technology transfer” to all sectors in LDCs, under Art. 66.2 of TRIPS. In practice, however, very few LDCs have been able to make significant progress in technological upgrading through the strategic use of special and differential measures, Bangladesh being perhaps the main exception in relation to the rapid growth of its pharmaceutical industry (UNCTAD, 2020; Helal Uddin Ahmed, 2019). However, the use of these flexibilities is at times restricted by WTO-plus obligations included in bilateral trade and investment agreements, as recently reflected by the litigation risks associated with policy responses to the COVID-19 outbreak (Bernasconi-Osterwalder et al., 2020).

Often, for development partners, it is easier to share the finished products with LDCs than the technology and knowledge required to build the productive capacities necessary to initiate domestic production, continuing a ‘dependence’ on their technologies and innovations. Their argument being that building domestic manufacturing capability would take years in LDCs. It has been the case with COVID-19 vaccines.

The COVID pandemic has exposed the grave shortcomings in LDCs with respect to pharmaceutical and especially in relation to vaccines. As an example, only 1% of the total vaccines administered in Africa are manufactured there. The pandemic and the related millions of deaths has been a wakeup call for LDCs to look for funding, expand their research capacity, and set up national regulatory bodies to meet international standards. At present, out of Africa’s ten vaccine manufacturers, only four are capable of producing vaccines (of which the Institute Pasteur of Dakar is the only one in an African LDC), the others ‘fill and finish’ imported products, mostly imported from India (Nature, 602, 184, (2022).

The 2022 EU-AU Summit “Joint Vision for 2030” resulted in a support package containing a promise of investment equal to 150 billion EUR over seven years to support the delivery of vaccines in Africa. Although welcomed, that package fell short of recognizing support for the waiving of IPRs on COVID-19 vaccines. The latter could have spurred innovation through vaccine manufacturing in Africa. In June 2022, two years after the debate over the potential COVID-19 vaccine patent waiver, the WTO adopted a partial waiver of IPRs during its 12th Ministerial<sup>83</sup>. Specifically, the WTO decision waived patent rights on vaccines and allowed for the use of protected clinical trial data for regulatory approval of vaccines<sup>84</sup>. In spite of the presence of the waiver and of a compulsory licensing provision to override IP during emergencies, most LDCs are still prevented from accessing the vaccine: due to (i) lack of access to other types of IP, such as trade secrets; (ii) lack of required manufacturing capacity, and related infrastructure; and (iii) lack of purchasing capacity. To overcome the fact that 99% of vaccines are imported, African Union member states, are now implementing a target announced in 2022 for 60% of Africa’s routinely used vaccines to be made on the continent within the next two decades. This includes investing in R&D, education and building sites. (Irwin, 2021a; Gabriele, 2022)

It needs to be stressed that while non-market services generate more than one fourth of total employment in developed countries, the corresponding figure in LDCs is a mere 6%. According to UNCTAD (2020), this reflects the reduced spending of LDC Governments and firms in health and education, which contributed to the weakness of LDCs’ health systems and hence their limited preparedness to deal with the COVID-19 pandemic.

At the African continental level, the AfCFTA could facilitate the operationalization of the African Medicines Agency (ratified by 23 African states in 2019<sup>85</sup>), whose role is to regulate and harmonize this market within the continent and encourage production in Africa. It should further aim at limiting the trafficking of false medicaments. Unsurprisingly, African LDCs are lagging behind in the development of digital technologies in the medical sphere. The development of this sector seems to be constrained by the absence of legal standards and norms, expertise, and competencies. These problems could be solved by an African-based strategy in the context of the AfCFTA.

What else could be done to speed up vaccine production? According to Irwin (2021b), a call for a coordinated technology transfer, under the auspices of the WHO, from universities and manufacturers to license their vaccines to other companies in low-income countries. This could facilitate the training of staff and coordinated investment in infrastructure.

<sup>83</sup> As of May 2023, COVID-19 Vaccine Patent Waiver is no longer applicable as WHO is no longer considering COVID-19 as a public health emergency of international concern, the highest level of alarm that mandates countries to act under international health regulation.

<sup>84</sup> This differs from the initial proposal submitted by India and South Africa in 2020 which called for a broad waiver as well as the rights over therapeutics and diagnostics.

<sup>85</sup> Jeune Afrique, n. 3126, July 2023.

For the vast majority of LDCs that do not have the technology in place yet to produce the necessary pharmaceutical products, the focus should remain on building necessary productive capacities at the domestic level, targeting the building of the necessary infrastructure and the provision of the right education. These countries could spur innovation through alternative sources, such as open source, prizes, advanced purchase of contracts, to name a few.

### 4.3 Tourism

The tourism industry is made up of a range of products and services that interact to fulfil a tourist experience, combining both tangible aspects (hotels, restaurants, transportation, infrastructure and experiences, etc.) and intangible elements (such as environmental and climatic conditions and security, etc.) (Debbage & Daniels, 1998). These elements combine to create the “value” of the experience for the consumer. The supply of tourism services in developing economies can be diversified and strengthened by coordinating investment and innovation from the private sector and support from the public sector.

In the context of the LDCs, the development of tourism activities in rural areas is a key factor in achieving progressive structural economic transformation by creating employment, generating complementary sources of income, training human resources, upgrading infrastructure, and strengthening other related productive chains through the provision of inputs and the integration of excluded or vulnerable groups (UNWTO, 2023). Rural tourism activities take place in non-urban (rural) settings, typically with a low population density, in landscapes and regions where land use patterns based on agriculture and forestry prevail, and in the context of social structures that prioritize traditional ways of life.

Rural tourism—in the form of community tourism, sustainable tourism or ecotourism—has been promoted as a development alternative. Community tourism allows a high level of control and a considerable share of the planning of tourist activities and their benefits to remain in the hands of local communities. The rural approach to tourism incorporates non-traditional actors, such as small farmers, fishermen and artisans, who can all integrate their activities into the tourism industry, however, these linkages require more formalization in order to provide a range of excursions and visits to different points of attraction, both natural and cultural, with a higher degree of professionalism. Rural tourism has the potential to generate positive social impacts, such as intercultural dialogue between tourists and locals (Frías et al., 2016). The environmental dimension also occupies a central place in this approach.

In its Handbook on Tourism Product Development, UNWTO (2012) set down suggestions and guidelines for the effective planning and implementation of tourism products and services within a territory. Tourism destination branding should also be considered in the context of the wider and more complex concept of nation branding. Among other strategies, certification marks can be used to distinguish quality services, unique tangible and intangible aspects of tourism experiences and exceptional cultural and social heritage, derived from the traditional knowledge and culture of a particular tourism destination. Certification marks can be leveraged in a broader industrial policy approach as a tool to establish a competitive edge and strengthen the destinations’ reputation in a specific tourism market segment (WIPO & UNWTO, 2021). In this regard, a brand image can be built around a distinctive visual (or combination), including in the form of a trademark, such as a word, color, logo, or slogan to differentiate goods and services. Moreover, certification processes are usually aimed at instilling a culture of service excellence, through continuous and professional training for local human capital aimed at enhancing the quality of services and systematic improvement of quality.

For example, Costa Rica has emerged as a market leader and innovator in the sustainable tourism and rural or ecotourism subsectors (OECD, 2020). The Costa Rican Tourism Institute (ICT) developed the Certification for Sustainable Tourism (CST) program in 1997 for tourism companies with the goal of categorizing and differentiating them according to the degree to which their operation approaches a sustainability model, in its management of natural, cultural and social resources (Visit Costa Rica, 2023). The majority of businesses within the tourism sector that have received the certification are hotels, as well as some other tour companies, museums, and transport businesses. The program views sustainable tourism not just as a response to market demand; rather it is an indispensable precondition for competitiveness today and in the future. The certification seeks to assess the degree to which businesses consider the proper management of natural and cultural resources; the improvement of the quality of life of the neighboring communities; and economic success, which can have important spillover effects in the realization of other national development programs.

Costa Rica’s Certificate of Sustainable Tourism is governed by a Technical Verification Committee (La Comisión Técnica de Verificación del CST), comprised of representatives from academia, the private and public sectors and international organizations. Specific members include the Instituto Costarricense de Turismo, Ministerio

de Ambiente y Energía, Ministerio de Cultura, Instituto Nacional de Biodiversidad, Universidad de Costa Rica, Instituto Centroamericano de Administración de Empresas, Cámara Nacional de Turismo, Consejo de la Tierra y La Unión Mundial para la Conservación de la Naturaleza. It is the responsible body for granting the CST designation and for ensuring that those business who have met the seal's standards continue to conform to and apply the certification criteria.

At present, the CST is divided into two levels: basic and elite (Instituto Costarricense De Turismo, 2018). To meet BASIC standards, the enterprise must comply with all mandatory considerations. CST ELITE level certification requires compliance with all mandatory criteria, in addition to efforts that ensure that 30% of criteria for improvement and continuity of the business, as well as 70% of criteria for the consideration of the businesses' external impact are met.

Furthermore, trademarks represent an important IPR component of the tourism industry. For example, Malée Cosmetics Pty Ltd (Malée) a manufacturer and retailer of premium cosmetics products, has maintained a strong position within a niche eco-luxury market of the hospitality industry in South Africa. To enter the eco-luxury niche of cosmetics products, Malée made the strategic decision to create quality brands that are sourced with natural ingredients and inspired by the landscape of the African continent.

To this end, Malée has used quality natural ingredients for its products including avocado, coconut, almond, wheat germ, shea butter, aloe vera, mint, grapefruit, and tea tree extracts. In addition, its cosmetics are made from 100% recyclable materials and presented in attractive, well-made packaging with inscriptions inspired by African mythology and landscapes. To create distinctive and attractive products, Malée relied on unique branding. Malée's logo is represented by a series of three circles (with each smaller than the next, and a larger circle containing a smaller one) that originate in the Adinkra myths of the Asante Nation in the Republic of Ghana. Having established a well-crafted branding and commercialization strategy, Malée relied on IP protection to keep its avenues for future expansion open. To this end, Malée registered a trademark for Malée Cosmetics (2009) via the Companies and Intellectual Property Commission – South Africa's IP office.

Since its foundation, Malée has been a star rising high above the African horizon. The company has created a strong portfolio of goods and brands that have been making headlines in the eco-luxury sector of the skincare and hospitality industry. In 2011, three of the company's products (the Hydrating Body Scrub; the Hydrating Body Cream; and, the Anti-Bacterial Hand Wash) were finalists in the "Best of Beauty" category awards by Fairlady – one of the leading magazines for women's products based in Cape Town, South Africa. Its products have also been featured in world-famous magazines including Cosmopolitan, Glamour, and Marie Claire<sup>86</sup>.

GIs are also widely used to promote tourism in rural and often remote areas. The case of a variety of pepper in Cambodia is a case in point. The issuance of a GI of the Kampot pepper, a fine variety of pepper which has been cultivated in the province of Kampot for centuries, has boosted the production and export of this type of pepper. Accordingly, farms producing Kampot peppers have grown in numbers and became a main destination for tourists in Cambodia (UNWTO & WIPO, 2021).

Another IP tool that has been utilized to develop the tourism sector is collective marks. Collective marks are a form of trademark owned and used by members of a collective entity or a community. This IP tool stimulates social arrangements of collaboration and economic clusters by providing incentives for local firms to improve the quality of collective goods and services, promote cultural heritage and enhance their marketing capabilities. Collective IP rights allow for more funding opportunities for local culture firms and systems in order to cluster into tourist cultural districts since they protect against unfair competition and copying and enhance local reputations (Ghafele, 2008).

For example, The Gambia has launched initiatives to regulate the informal economy related to tourism, such as street vendors, tourist taxi drivers and small hotels and guesthouses, through the Association of Small-Scale Enterprises in Tourism (ASSERT). The application of collective marks to this informal tourism-related sector would showcase to all visitors and other tourism stakeholders that these products and services meet the set standards which consequently enhance the collaboration between all local tourism players, including the services providers and agricultural producers (UNWTO & WIPO, 2021).

NGOs have and are playing a big role in supporting LDCs to use the available IPRs. In the case of Cambodia, "Promoting Education, Empowering Youth" (PEPY), formally known as "Protect the Earth. Protect Yourself." is a non-governmental organization (NGO) established in 2005. In 2007, PEPY was registered as an international NGO, with US 501(c)(3) status. In 2014, PEPY re-registered as a Local Non-Government Organization (LNGO)

<sup>86</sup> "From Africa with love: Branding and competitiveness", <http://wipo.int>, accessed on 25 August 2023.

and transitioned to a fully localized NGO called PEPY Empowering Youth in 2015. The organization aims are to improve access to education and other community services and to develop the self-reliance capability of people in the province. PEPY has focused on four main areas of implementation: Khmer Literacy; School Partnerships; Supplemental Education; and Community-based Education.

As part of the organization's activities, it established a tour company – called PEPY Tours – which offers educational trips, including visits to NGOs, and opportunities for debates and discussions on issues relating to international development work. PEPY Tours' cycling and tour guiding services cater to foreign tourists with an aim to expose them to local culture and offer an opportunity to participate in community development projects.

In 2008, the NGO registered PEPY as a trademark and word via the United States Patent and Trademark Office (USPTO). In addition, PEPY registered the phrase “Adventurous Living. Responsible Giving.” as a trademark via the USPTO. The use of trademarked branding allowed PEPY and PEPY Tours to gain important exposure and visibility in the niche market for educational and experiential community-based tourism.

The company raises funds for its sister organization, PEPY NGO via educational tourism. PEPY Tours helps to finance the initiatives of the PEPY NGO and other local development initiatives in Cambodia. As of 2022, according to the organizations' Annual Report, the NGO has reached 5,690 total youth since its inception; reached 109 Villages as part of the organization's rural target communities; and trained 242 scholars since 2012.

PEPY NGO's new initiative, the Future is Bright Lab and Library allows youth to rent laptops, smartphones, hard drives, and additional tech for nominal fees. In the wake of COVID-19, the lab and library were launched to give PEPY youth access to IT for their work and studies. As part of PEPY's Youth Innovators' Space and Incubator (YISI) Program, which was started in October 2020, in partnership with USAID's and PACT Cambodia's We Act Initiative, the program provides training and workshops for new business owners and aspiring entrepreneurs. The YISI initiative has delivered exhibitions for Siem Reap-based entrepreneurs, attracting more than 700 participants each at two scheduled workshops.<sup>87</sup>

Lastly, BioBhutan is the first privately owned enterprise in the country specializing in organic and natural products. Founded in 2003 with the support of the Swiss-Bhutan Friendship Association and Helvetas, the company developed and marketed a lemongrass oil and lemongrass-based air spray. Today, BioBhutan is a private limited company with an expanded product portfolio including natural handmade bar soaps, essential oils, herbal teas, spices, and honey. The company registered the BioBhutan logo, and a trademark logo developed for the Japanese market at the Department of Intellectual Property in Bhutan.

BioBhutan's products target a niche market for nature-oriented goods and eco-conscious consumers. The company has also developed a unique business model that includes Dagala Community Groups to support access-and benefit-sharing with local communities resulting from product research, development, and sales. The enterprise also supports broader developmental aims, promoting ecological diversity and resilience, and providing training in natural and organic production to farmers. It supports some 260 households (about 1,300 individuals) and 16 farmers' groups.

BioBhutan's products are sold domestically and exported to the international market, primarily in Germany. Domestically, the company sells its range of products in high-end handicraft shops, supermarkets and hotels, which cater mostly to tourists and expatriates. To expand market access, BioBhutan aims to secure additional national and international certifications, which would convey higher levels of trust and confidence in their products to potential buyers.<sup>88</sup>

#### 4.4 Financial sector

Typically, in LDCs, the bulk of tertiary employment is concentrated in less knowledge-intensive services, namely retail trade, the repair of motor vehicles, and accommodation and food services. These are typically

<sup>87</sup> Empowering a Generation via Intangible Assets. Accessed 21 August 2023. <https://www.wipo.int/ipadvantage/en/details.jsp?id=3119>; New Initiatives. <https://www.pepyempoweringyouth.org/new-initiatives/>. Accessed 25 August 2023; PEPY Annual Report 2022. <https://www.pepyempoweringyouth.org/wp-content/uploads/2023/01/Annual-Report-A4-2022-FINAL.pdf>. Accessed 28 August 2023; and PEPY Empowering Youth's Strategic Plan September 2023 – August 2028. <https://www.pepyempoweringyouth.org/wp-content/uploads/2023/07/PEPYs-2023-2028-Strategic-Plan.pdf>. Accessed 28 August 2023.

<sup>88</sup> BioBhutan: Organic Products with Farmers' Welfare as Cornerstone Value. Accessed 21 August 2023. <https://www.wipo.int/ipadvantage/en/details.jsp?id=12387>.

low-productivity and low value-added activities, and often carried out in the informal sector. These service sectors are especially important for African and island LDCs, and account for some two-thirds of employment in the service sector in these countries; however, in Asian LDCs, knowledge-intensive services account for one-fourth of services employment – a higher level than in other LDC groups. The highest pace of productivity growth took place in the Asian LDCs, largely as a result of relatively faster productivity growth in manufacturing and services in countries.

It is clear that services have come to play a critical role in global and regional value chains, international trade and for employment creation in LDCs. They now account for 17% of total trade and for a third of total trade of island LDCs (see Table 3 below). Although the majority of services exports are concentrated in two traditional sectors, namely travel and transport, high knowledge-intensive services are being developed. In some cases, the latter dominate the services sector: in Liberia (with pension and insurance services); in Chad (telecommunications, computer and information services), Guinea (manufacturing services), and Sierra Leone (telecommunications, computer and information services). Furthermore, non-merchant government services account for the majority of total trade in Burundi and Central African Republic (UNCTAD, 2022b).

Table 3: Trade in services and in goods, 2005-09 and 2017-2021				
(as percentage of total trade in goods and services)				
	Trade in services		Trade in goods	
	2005-09	2017-21	2005-09	2017-21
Asian LDCs	15.9	19	84.1	81
African LDCs (plus Haiti)	12.3	16.2	87.7	83.8
Island LDCs	46.4	33.2	53.6	66.8
LDCs	13.4	17.4	86.6	82.6

Source: UNCTADStat

The financial sector has evolved and non-traditional actors account for an increasingly large share. While banks remain the largest and most important, other actors, such as investment banks, insurance companies, mutual funds, pension funds, venture capital firms, and many other types of nonbank financial institutions now play substantive roles. To overcome the diversity of financial systems across countries, the IMF has prepared an indicator, the Financial Development Index<sup>89</sup>, which includes multiple indicators to measure the extent of financial development. Although LDCs are still further behind from developed countries (with an average that is five times higher than that of LDCs, i.e 0.6), all groups have increased their extent of financial development over time, with the Asian LDCs leading the way (see Table 4 below).

Table 4: Financial Development Index		
	2000-02	2019-21
Asian LDCs	0.11	0.19
African LDCs	0.09	0.11
Island LDCs	0.06	0.10
LDCs	0.09	0.12

Source: IMF (accessed on 14/8/2023).

Similarly, Naehar & Narayanan, (2023: 2) found that ‘many low-income countries (LICs), particularly in Africa<sup>90</sup> and South Asia, which do not rank high according to achieved levels of private capital flows relative to GDP, are in fact performing on or very close to the efficient frontier<sup>91</sup>, indicating that these countries are good performers given the resources available to them’. This finding is based on an application of Data Envelopment

<sup>89</sup> See, Sviridzenka (2016) for a detailed account on the Index construction and limitations.

<sup>90</sup> UNCTAD (2022b: 119) argued “that private capital investment in Africa is flourishing: the number of private capital transactions reached a record high of 429 in 2021, valued at \$7.4 billion, an 85 per cent increase over 2020 (\$3.4 billion) More than half of the private capital investment transactions recorded in 2021 were concentrated in venture capital, corresponding to a total value of \$5.2 billion raised in 650 transactions, from 604 companies”. The above reveals a large contribution to the funding and growth of technology and technology-enabling companies, which characterizes a growing number of start-ups and SMEs in some African countries.

<sup>91</sup> The frontier is designed to trade countries’ relative, rather than absolute, performance over time within the sample.

Analysis methods to estimate countries' performance in mobilizing private capital relative to their domestic environment. The authors argue that, on the basis of their model, there are many LICs that perform better than more developed countries given the economic resources and conditions. This is due to increases in private capital flows or changes in the frontier itself, due to changes in the performance of other countries. As these countries have experienced the greatest catching up with the frontier between 2007 and 2018, it will be more difficult for them to further increase private capital flows unless there is a significant improvement in their domestic conditions, including on institutional and regulatory quality and human resources.

This is important because the above policies should be part of a holistic and programmatic strategy, which must include private sector development, productive capacities building, entrepreneurship supporting policies, education and vocational trainings, and employment strategies.

The advent of digitalization and servicification imply that some features traditionally ascribed to manufacturing – notably the scope for productivity growth and increasing returns – might also potentially apply to some services, especially in knowledge-intensive services. However, the opportunity to engage in the adaptation and production of advanced technologies and weather future external shocks largely depends on the presence of a certain manufacturing base and the acquisition of complementary skills. As mentioned in UNCTAD (2021) one of the key lessons of the COVID-19 pandemic is that resilience requires adaptability and the capacity to innovate, e.g. repurposing the production of textiles to that of personal protective equipment, or that of alcoholic beverages into disinfectants. These features are inevitably contingent on pre-existing capabilities.

Clearly, the decision as to the kind of IPRs to adopt depends on the technological capability of a country, its competitive strength and innovation imperative (Basheer & Primi, 2014). On top of the limited productive capacities in most LDCs, which accounts for the low utilization of key services inputs, structural barriers exist that undermine the development of the tertiary sector, to include high cost of trade in services, protectionism, poor infrastructure and equipment issues, low levels of digitalization and technology, difficult access to financial services, poor regional integration, a limited competitive environment, amongst others (UNCTAD, 2022a).

Financial technology has been spreading in the LDCs, but it has yet to reach the development stage, in which economies can leverage it to support the financing of valued added productive activities. Mobile money, the most commonly used financial technology in Africa and in African LDCs, is only being utilized to advance short-term microloans to users (UNCTAD, 2022b). Typically, those sectors that dominate the financial technology industry in LDCs are payments and remittances, marketplace lending and wealth technology.

For example, Uganda's Eversend offers a multi-currency e-wallet, while also providing financial services such as money transfers, currency exchange, virtual debit cards, and stock trading. It has expanded its operations to both personal users and business clients in Uganda, Kenya, Nigeria, Rwanda, Ghana, and Nigeria. Another notable example, Yo! Uganda Limited, offers technology-based solutions to businesses such as Yo! Payments, the company's mobile payments aggregation service. The Government of Uganda through the Bank of Uganda has also taken policy action to nurture and regulate the country's fledgling FinTech sector. Uganda's Regulatory Sandbox Framework was created following the country's National Payment Systems Act, 2020 and serves as a tailored regulatory test environment for new, innovative products, services or business models. Moreover, it creates a controlled operational space, with regulatory oversight. To further support digitalization in Uganda, and other African LDCs, it is necessary to enhance both the availability of technology, for example by developing the e-commerce infrastructure, and improve its accessibility and governance. Furthermore, it is important to develop inter-sector linkages and foster the creation of new or deepen existing value chains at regional and international levels. (UNCTAD, 2022b)

Moreover, the patenting of payments processing systems is rapidly evolving. The licensing of technology and software to run the payment platforms is an important component of a payments processing business. E-payments and mobile payments are expanding rapidly in Africa and African LDCs. According to a McKinsey's Report (2022), Africa's domestic e-payments market is expected to see revenues grow by approximately 20 percent per year, reaching around \$40 billion by 2025. Growth is expected to be uneven though - with African LDCs being at the lower end - as it will depend on infrastructure readiness, e-commerce and mobile money penetration and regulation<sup>92</sup>.

New and innovative technologies are enabling easier consumer and merchant transactions and new business models and offerings. For example, integrated universal QR codes are reducing complexity linked to payment

<sup>92</sup> Furthermore, the African Import-Export Bank, with the AU and AfCFTA Secretariat launched in 2022 the Pan African Payment and Settlement System PAPSS which is a cross-border technology that would enable simple and immediate payment transactions across 42 different African currencies, saving million of dollars in currency transactions.

methods. Investment in real-time payment infrastructure by fintech companies is likely to grow in the future and serve as an important accelerator. Underserved SMEs represent an opportunity for fintech, thanks to their tech-led models and lower operating costs.

As argued by UNCTAD (2022b), when accompanied by appropriate regulatory frameworks, financial technology can increase SMEs' access to long-term financing by helping address the asymmetric information problem inherent in financing decisions for SMEs, so that funds can also flow more readily into this traditionally neglected but promising sector.

How IPRs are used in the above industries should be best seen on a case-by-case basis. In some countries, notably those with a high technological potential, have an opportunity to protect new developments with IPRs, both for defensive and offensive purposes. Other countries may wish to use other non-IPR forms of protection to spur domestic innovation, for example relying on open source technology.

It needs to be stated that in developed countries, IPRs are also used as investment options. Investment funds are creating products for investors who want to earn profits from music royalties, as an example. Also, building on the domestic capacity of developing new IPRs (patents, copyright, trademarks), MSMEs, could use these IPRs as loan collaterals. This mechanism is utilized by several developing countries. In early 2023, the Government of Bangladesh introduced this option, as part of their "Secured Transactions (Immovable Property) Act 2023"<sup>93</sup>. To the author's best knowledge, it is the first LDC to adopt such a scheme.

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<sup>93</sup> <https://www.tbsnews.net/economy/banking/intellectual-property-apps-software-can-be-used-bank-loan-collateral-634246>.



# INNOVATION IN THE INFORMAL ECONOMY

In LDCs, the informal sector and the informal economy are important sources of employment and of innovation. The informal sector includes activities ranging from street vending to informal garment businesses, to home-based micro firms to manufacturing entities and informal services subsectors (DeBeer, et al., 2013). Although the prevalence of informal enterprises is difficult to measure; the scale of the shadow economy, at around 35 per cent of gross domestic product, provides a conservative indicator in an LDC context (UNCTAD, 2018: 6). Innovation in LDCs is driven by domestic needs, it is incremental and mostly located in the informal economy.

Entrepreneurial activity in LDCs occurs predominantly in sectors with low entry barriers and limited skills requirements, in particular consumer-oriented services such as those involving retail, motor vehicles, lodging, restaurants, personal services, health, education and social and recreational services. Involvement in more transformative activities, such as construction, manufacturing, transportation, communication, utilities, wholesaling and business-oriented services, is more limited. This suggests that the entrepreneurship potential in LDCs translates only to a limited extent into innovative businesses capable of playing a catalytic role in structural transformation.

Limited access to finance and cumbersome regulatory and administrative processes are among the key factors contributing to increased informality. Informality has the highest cost of starting a business both in terms of financial capital requirements and the number of days to process business registrations UNCTAD (2022b). Innovation in LDCs is distinct from innovation elsewhere in the world. Due to the large share of informality, it is highly likely that innovation will take place outside of the standard market-based economy. Formal IPR protections may not be appropriate in this context due to high costs, lack of knowledge, skills, good infrastructure, access to information and financing, high risks, lack of enforceability mechanisms due to the informal context, among others. Utility models, industrial designs, trademarks are less costly, but they nevertheless require the necessary knowledge and the clear identification of the owner of the idea, which may be difficult to find in an informal setting.

UNCTAD (2018: 7) found that “the informal sector in LDCs is dominated by microenterprises with fewer than five employees and small enterprises with between five and nine employees, which represent 74 per cent and 20 per cent of the total, respectively. The rest are medium-sized enterprises. Unpaid workers, generally families, make up 38 per cent of the employment in informal enterprises, and in most instances, the use of such labour declines sharply as size increases. Gender inequality is marked; 50 per cent of women employees are unpaid, compared with 33 per cent of men, while women have ownership over the largest part of their firms in only 30 per cent of the cases.” Furthermore, innovation is limited among entrepreneurs in LDCs, and me-too businesses, based on imitations of existing activities, generally predominate. On average, only 15 per cent of early entrepreneurs in LDCs report the introduction of a new product or service, compared with 24 per cent in other developing countries, and entrepreneurial activity by employees is also more limited.

Given the relatively high share of micro, small and medium-sized enterprises (MSMEs) in LDCs’ private sectors and in the job market, IP tools could be used as ‘business’ strategies. SMEs are often the driving force behind invention and innovation. This innovative capacity is restricted due to the many challenges LDCs face: access to information, technology transfer, lack of adequate knowledge of the IP rights, on top of the more basic challenges linked to limited infrastructure and connectivity access, financing, among others.

Although it has been shown that innovation can and does occur also in the informal sector, it happens differently than in the formal/traditional settings and it is mostly linked to survival and scarcity. It is therefore likely for it to take place outside of a standard market-based environment. In fact, informal firms are more concerned with producing new products than utilizing technology, as they can get an immediate return. While information diffuses freely in an informal sector, particularly within clusters and communities, it does not have the capital, skills and resources needed to invest in technology and skills, (deBeer et al., 2013).

Charmes et al. (2018: 546) found that the majority of innovation appropriation mechanisms in the informal economy are informal in nature, “with lead time, sales or service efforts, customer loyalty and after-sales efforts being the most important.” The use of formal IP is low to non-existent. They further added that “the innovation system [...] largely rests on ‘collective learning experiences’ based on low entry barriers and free flows of knowledge”.

Given the extent of informality, R&D policies are not useful in promoting innovation in LDCs. This probably explains why no LDC has reached the 2007 commitment made by AU member states to devote 1% of gross expenditure on R&D as a percentage of GDP, with Cambodia at 0.1%, Uganda at 0.2%, and Ethiopia, Mali and Nepal at 0.3% (Tesfachew and Adhikari, 2022). These findings should be compared against the 1.5% for low and middle-income countries.

While there is an agreement amongst practitioners that the acquisition of skills in the formal sector is important for a country's innovation-based development plan, there is some disagreements as to whether the same applies to the informal sector too (see OECD & Eurostat, 2005; ILO, 1992). Clearly, imported products which have a degree of technological intensity are an important source of innovation as they give scope to MSMEs to learn through imitation. This applies equally to the formal and informal sectors. This said, the higher the technological intensity of the imported products, the more difficult it will be for LDCs to adopt and adapt imported technologies, given the sophistication of the local economy and the skills of the domestic entrepreneurs (deBeer et al., 2013).

Table 5 below shows the evolution of the technological intensity of imports of LDCs between 2011-2013 and 2020-22. The share of high-skills and technology-intensive manufactures has increased by 2 percentage points in the last ten years. This may have made it harder for the formal, and particularly so for the informal, sector to 'internalize' foreign innovation through imported technology. Furthermore, the share of medium-skills and medium technology-intensive in total import has decreased by 3 percentage points while that for resource-intensive manufactures has increased by 2 percentage points. The latter, together with low skill manufacture, is likely to be important for sharing the learning process in informal MSMEs.

**Table 5: LDCs' merchandise imports by technological intensity**  
(Average in thousands of USD, and % of total imports)

	2011-2013	Per cent of total imports	2020-2022	Per cent of total imports
Labour-intensive and resource-intensive manufactures	27,902.9	12.6	43,777.1	14.4
Low-skill and technology-intensive manufactures	23,696.4	10.7	30,462.6	10.0
Medium-skill and technology-intensive manufactures	47,497.5	21.5	54,502.6	18.0
High-skill and technology-intensive manufactures	36,160.9	16.4	54,827.7	18.1

Within LDCs, increasing productivity and employment for long run sustainable growth requires a twin strategy of investing in dynamically growing sectors (mostly in the formal sector) while at the same time building capacity in sectors where the majority of labour is employed. A strategy of investing only in dynamic sectors in attempts to "leapfrog" may not be enough to reduce poverty, mainly because the fastest-growing sectors may often not be where the majority of the poor are employed and may require skills and training that the poor do not possess.

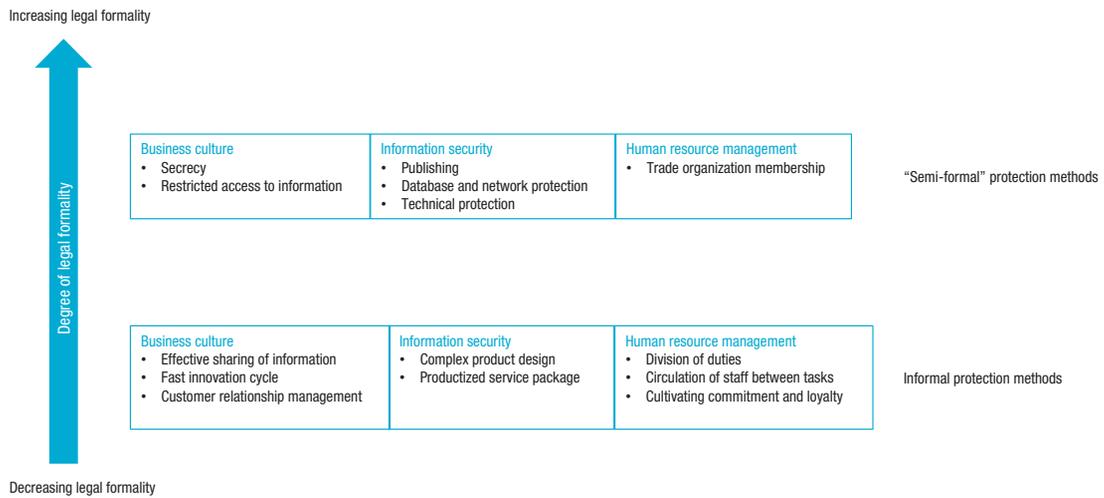
Other more flexible legal mechanisms, such as trade secrets, should be considered as better options to the classical IPR regimes, focused mainly on patents, copyright and trademarks, for informal sector innovations.

Furthermore, as already mentioned, there exists a variety of other IP protection activities, which are simple, easy, and cheaper and are embedded in the normal working practices of a firm. These alternative protection methods (discussed further below and outlined in Figure 1) tend to protect SMEs against internal risks (eg. The departure of valuable staff) or external risks (eg. Unfair exploitation of new ideas by other firms) and can be used as a complement to formal IPRs. The great advantage that informal protection mechanisms have is the fact that they are dynamic and thus do not provide permanent solutions for knowledge protection but require constant updating and maintenance. Clearly, these informal types of protection can be applied by those MSMEs working in the formal sector too. It needs to be mentioned from the beginning that not all the informal protection measures discussed here are applicable to MSMEs in the informal sector.

Firms in the services sector, particularly IT firms, tend to protect their know-how (from employees) more than in other sectors, through secrecy, restricted access to key information, technical protection of the information through coding or a fragmented division of tasks (see Figure 1). They have been divided into three groups related to business culture, information security and human resource management. Loyalty-building strategies (through financial incentives, training and the like) present a way of keeping (employees') knowledge and, thus, IP. Also, in the service sector where copying is widespread, one IP management method is the publishing of a new idea. The latter would prevent others from claiming patenting in the same area.

For informal MSMEs, alternative policies that may be more appropriate are those related to business culture, in particular, sharing of information, and customer relationship management. Also, grouping in cooperatives and/or other trade-related organizations could be a viable option.

**Figure 1: Alternative IP Policies and their relevance for LDCs**



Source: UNCTAD based on Paalysaho and Kuusisto (2011).

Lastly, Basheer (2010) suggests a set of informal IP norms to protect informal economy innovations. They include: lower costs for acquiring and enforcing rights, limited or no registration requirements, reduced barriers to licensing, a lower registration threshold for utility models and a weaker set of rights, among others.

In the case of LDCs, a good share of innovation occurs in the informal creative economy, notably related to the domestic music industry, artisanal and traditional knowledge. This is an area that deserves further research.



## FURTHER REFLECTIONS AND CONCLUDING COMMENTS

Ideally, as countries develop, their economic structure changes and they transform from dependence on the production and export of primary commodities and basic agriculture to the processing of higher value added, more sophisticated products and services. This core development process is known as structural economic transformation, or commonly structural change, and it is an essential step towards the achievement of sustainable and inclusive development. However, the experience of many developing countries, especially LDCs over the last five decades shows that the reality is far different from this ideal scenario. Not all types of products and exports have the same impact on development. That is, they do not necessarily lead to stronger growth, income and employment generation or productivity improvements. Nor are they a one-size-fits-all guarantee to achieve structural economic transformation.

From a policy perspective, this means that developing countries must pay close attention to the types of products they produce and export – which – in turn - means paying attention to the types of competencies and capabilities that they develop. This is because high-value, high-productivity and more sophisticated goods and services generate more income and have more positive impacts on productivity, skills development and technological learning than a recurring dependence on commodity-led economic models. It has also become apparent that not all types of growth are desirable or lead to the kind of inclusive growth that enables countries to reduce poverty and achieve sustainable development. Evidence from across developing countries and in particular, LDCs reaffirms that old commodity-dependent development models have not been successful in creating the kind of inclusive, job-creating structural transformation that improves lives and livelihoods. Moreover, for LDCs to truly achieve transformational results, a holistic approach and strategy to development, built on strong leadership and domestic ownership is critical. The importance of innovation for the structural transformation process calls for a State that is entrepreneurial in its approach and marked by ambition, willingness and ability to lead the development process. Furthermore, rapid digitalisation and the emergence of frontier technologies are fundamentally altering the development landscape and placing even greater importance on the need to innovate and develop technological capabilities, including in LDCs. Protecting innovation in these countries and encouraging the advancement of stronger productive capacities that are supported by stronger institutions can play an important role in LDCs' development strategy.

As UNCTAD (2018) argued, the technological capabilities that firms need to survive and thrive can be promoted through fiscal and other incentives for firm-level innovation, government procurement policies, training, public research centres to support innovation in particular sectors and public innovation awards. Accelerator programmes, business incubators, science parks and technology research hubs are widely used to kick-start high-growth entrepreneurship. In this regard, coherence and coordination between industrial policies and policies for science, technology and innovation are critical.

Intellectual property protection should be mainstreamed as a core part of this holistic approach and coordinated with industrial, trade, agricultural and other complementary development policies. In this regard, a multi-pronged approach to IPRs, including via domestic and international filings and through the utilization of various methods of IPRs that are reflective of the actual level of development and needs for technological change is needed. Clearly, the decision as to the kind of IPRs to adopt depends on the LDCs' technological absorption, its level of productive capacities, its competitive strength and innovation potential.

The paper has analyzed six of the major forms of IPRs protection. It has also endeavored to provide a few illustrative case studies of how they were applied in LDCs and in other developing countries. Based on the analysis presented herein, the first major conclusion that emerges for LDCs is that patents are not the only available option to protect and encourage innovation. UMs may be easier to apply where there is weak domestic capacity to innovate and R&D systems are still nascent and face their own structural and financial hurdles to development. However, UMs can be difficult to use, especially in the 23 LDCs where there are no existing national laws in place to regulate them. The description and operational requirements of UMs, copyrights, trademarks, industrial design and geographical indication for LDCs contained in the paper, while not meant to be prescriptive, could provide some potential options IP protection that could be used to protect the "creativity and scope" of national IPR systems in LDCs.

Secondly, IP protection and related legal frameworks should not be viewed as an afterthought. This is true at the country level and, where relevant, should be considered as a priority for regional economic groupings and sub-regional bodies. At the firm level, IP protection should be prioritized in a context of stronger risk management, as well as part of marketing, outreach and investment efforts, specifically for companies seeking to protect their innovations and attract new investments and partnerships. Dedicated departments and skilled professionals should be engaged and trained (at the appropriate moment and scale) to man the domestic IP offices.

Protecting innovation in LDCs can also be viewed as a form of investment. Adequate, intellectual property protection can also provide forward looking benefits for countries at the national level and for individual enterprise, including enhanced foreign and domestic investment potential, reputational strengthening and potential revenue streams/assets. Structural economic transformation and inclusive development is a long-term, and often incremental process. Therefore, strong leadership, capable technocracy and a well-functioning microeconomic and macroeconomic enabling environment for both the public and private sectors are critically important. For this, adequate training and capacity-building efforts need to be implemented at the domestic level.

Fostering innovation, through IPR, could further attract foreign investors in those sectors that have the highest growth potential, as seen in the preceding sections. Public-private programs, such as innovation funds co-sponsored by national governments, can provide the seed money to fund technological discoveries. For example, such innovation funds were successfully established in South Africa and played instrumental roles in prioritizing the use of patents and IP tools and fostering the evolution of the innovation culture in South Africa. The funds focused on patents as the main IP instrument to promote innovation by making patenting a requirement of receiving funding and requiring the recipients of its funding to manage any resulting patent (Brant & McLean, 2018). Clearly, these policies must go hand-in-hand with relevant education and training strategies. Collaboration between universities, research centers and domestic as well as multinational companies should be encouraged to facilitate technology transfers.

Thirdly, most LDCs have IPR laws at the national, regional and subregional level and they have increasingly complied with international treaties. The real challenge seems to be represented by the lack of enforcement and awareness. Although since 2010, a lot has been done, the vast majority of people seem to be unable to comply with those laws, as they are too far away from their realities. In this regard, for African LDCs, the AfCFTA presents an opportunity to strengthen enforcement mechanisms, as well as coordination amongst the RECs in Africa on IPR issues. It follows that there is great expectation on how the AfCFTA IP Protocol will be implemented.

Fourthly, innovation in LDCs is distinct from innovation elsewhere in the world. Due to the large share of informality, it is highly likely that innovation will take place outside of the standard market-based economy. Formal IPR protections are not appropriate in this context due to high costs, lack of knowledge, skills, good infrastructure, access to information and financing, high risks, lack of enforceability mechanisms due to the informal context, among others. Utility models, industrial designs, trademarks are less costly, but they nevertheless require the necessary knowledge and the clear identification of the owner of the idea, which may be difficult to find in an informal setting.

From the case studies analysed in the paper, it is clear that, in LDCs, civil society has played a significant role in supporting SMEs in their product identification and their application process. For the informal enterprises, the role played by cooperatives and associations to address the technological needs of informal agents needs to be highlighted. Clearly, the role that the above two actors have played for the formal and informal agents needs to be duly taken into account in designing appropriate domestic strategies aiming at fostering innovation.

As innovation in LDCs is driven by domestic needs, it is incremental and is also located in the informal economy, the paper looked at how innovation is occurring in the informal sector. Although a formalization of the kind of innovation occurring in the informal sector is not strictly speaking necessary, in those countries where a large share of innovation (through minor incremental innovations which are in any case new to the country and they contribute to some technological upgrading) occurs through the informal sector, a form of 'recognition' may be beneficial.

Within LDCs, increasing productivity and employment for long run sustainable growth requires a twin strategy of investing in dynamically growing sectors while, at the same time, building productive capacity in sectors where the majority of labour is employed (informal economy). A strategy of investing only in dynamic sectors in attempts to "leapfrog" may not be enough to reduce poverty, mainly because the fastest-growing sectors may often not be where the majority of the poor are employed and may require skills and training that the poor do not possess. In this regard, a holistic approach that links coordinated industrial, energy, transit and other sectoral policies must be also considered in tandem. Taken together, this can help to boost domestic productive capacity and raise opportunities for diversification of the economy.

Current innovation policies do not include targeted policies for the informal economy, as the latter is all too often not perceived as a source of innovation. For some LDCs, there may be a need to create a set of IPR-like

policies that are better suited to informal economy settings, such as lower costs for acquiring and enforcing rights, limited or no registration requirements, reduced barriers to licensing, a lower registration threshold for utility models and a weaker set of rights, among others.

Fifthly, as the adoption of innovations in private sector finance and the uptake of innovative funding mechanisms by SMEs can be limited by various factors - the most critical ones being the lack of financial education among SMEs, poor financial infrastructure, and legal and regulatory uncertainties -, there is an urgency for Governments to tackle these constraints for the future development prospects of their financial sector.

Lastly, for those LDCs close to graduation, as part of their domestic holistic programmes, it may be beneficial to include the WIPO national innovation policy as a component of a comprehensive approach to graduation. This should be designed in a proactive way, which should comprise a thorough cost/benefit assessment of which type of IPRs are needed and by when, and to design legislation that would be appropriate to the domestic socio-economic activity, if absent. UNCTAD can assist LDCs to prepare such holistic development strategies, building on its 60 years of targeted research and analysis and technical cooperation assistance. The paper has made some specific recommendations to graduating LDCs while discussing the pharmaceutical sector in Bangladesh.

As the paper has only focused on selected sectors, namely mining, tourism, the pharmaceutical and the financial sectors, a future extension of the research could include full coverage of how IPRs are dealt in agriculture, including all equity issues arising from food security, genetic resources, the effects of climate change, demographic challenges, the use and protection of traditional herbal medicines, among others.

Another stream of research could include a targeted analysis of how the 30-year-old TRIPS Agreement could be modified to be more development friendly, and include new LDC-specific flexibilities aimed at spurring domestic innovation and technological transfer, necessary to foster productive capacities at the national level. For LDCs, which continue to suffer from persistent structural impediments, the development of productive capacities is not a choice but a necessity and a precondition for diversifying their economies, upgrading their production and export capacities, coping with external shocks, moving-up the value-chain and achieving the SDGs. Specific policies for the graduated LDCs and low-middle income countries could also be envisaged.

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**Annex 1: LDCs signature and ratification of main IPR Treaties (as of June 2023)**

Treaty	Regime summary-Source	Signature	Ratification/Accession
Beijing Treaty on Audiovisual Performances (2012)	Intellectual property rights of performers in audiovisual performances. Source: WIPO website	Burundi, Chad, Djibouti, Guinea, Haiti, Madagascar, Mauritania, Senegal, Sierra Leone, Sudan, Zambia.	Burkina Faso, Cambodia, Comoros, Central Africa Republic, Kiribati, Mali, Sao Tome and Principe, Togo, Uganda.
Berne Convention for the Protection for Literary and Artistic Works (1886)	Protection of works and the rights of their authors. Source: WIPO website		Afghanistan, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Nepal, Niger, Rwanda, Sao Tome and Principe, Senegal, Solomon Islands, Sudan, Togo, Tuvalu, Uganda, United Republic of Tanzania, Zambia.
Brussels Convention Relating to the Distribution of Programme-Carrying Signals Transmitted Satellite (1974)	Prevent unauthorized distribution on or from the territory of contracting states of any programme-carrying signal transmitted by satellite. Source: WIPO website	Senegal	Benin, Rwanda, Togo.
Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (1977)	Recognizing the deposit of a microorganism with any «international depositary authority», irrespective of whether such authority is on or outside the territory of a contracting State. Source: WIPO website	Senegal	
Convention for the Protection of Procedures of Phonograms against Unauthorized Duplication of Their Phonograms (1971)	Protection of a producer of phonograms who is a national of another Contracting State against the making of duplicates without that producer's consent; against the importation of such duplicates, where the making or importation is for the purpose of distribution to the public; and against the distribution of such duplicates to the public. Source: WIPO website		Burkina Faso, Democratic Republic of Congo, Liberia, Togo.
Hague Agreement Concerning the International Registration of Industrial Designs (1925)	Allows applicants to register an industrial design by filing a single application with the International Bureau of WIPO. Source: WIPO website		OAPI, Benin, Cambodia, Mali, Niger, Rwanda, São Tome and Principe, Senegal.
International Treaty on Plant Genetic Resources for Food and Agriculture (2001)	Facilitates access to the genetic materials of the 64 crops in the Multi-lateral System for research, breeding and training for food and agriculture. Source: FAO website	Haiti	Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Cambodia, Central African Republic, Chad, Democratic Republic of Congo, Djibouti, Eritrea, Ethiopia, Guinea, Guinea-Bissau, Kiribati, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, South Sudan, Sudan, Togo, Tuvalu, Uganda, United Republic of Tanzania, Yemen, Zambia.
Lisbon Agreement for the Protection of Appellations of Origin and their International Registration (1958) Geneva Act of the Lisbon agreement (2015)	Protection of the geographical denomination of a country, region, or locality, which serves to designate a product originating therein, the quality or characteristics of which are due exclusively or essentially to the geographic environment, including natural and human factors. Source: WIPO website	Cambodia, Lao PDR. (Geneva act 2015)	Burkina Faso, Haiti, Togo.

<p>Locarno Agreement Establishing an International Classification for Industrial Designs (1968)</p>	<p>Establishes a classification for industrial designs.</p> <p>Source: WIPO website</p>		<p>Guinea, Malawi.</p>
<p>Madrid agreement for the Repression of False or Deceptive Indications of Sources of Goods (1891)</p>	<p>Prohibits the use, in connection with the sale, display or offering for sale of any goods, of all indications in the nature of publicity capable of deceiving the public as to the source of the goods.</p> <p>Source: WIPO website</p>		
<p>Madrid agreement Concerning International Registration of Marks (1891)</p>	<p>Establishment of a system that Protects a mark by obtaining an international registration that has effect in each of the designated Contracting Parties.</p> <p>Source: WIPO website</p>		<p>Bhutan, Lesotho, Liberia, Mozambique, Sierra Leone, Sudan.</p>
<p>Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks (1989)</p>	<p>Make the Madrid system more flexible and more compatible with domestic legislation.</p> <p>Source: WIPO website</p>	<p>Senegal</p>	<p>Afghanistan, OAPI, Bhutan, Cambodia, Gambia, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mozambique, Rwanda, Sao Tome and Principe, Sierra Leone, Sudan, Zambia.</p>
<p>Marrakesh Treaty to Facilitate Access to Published Works for Person Who Are Blind, Visually Impaired or Otherwise Print Disabled (2013)</p>	<p>Requires Contracting Parties to introduce a standard set of limitations and exceptions to copyright rules in order to permit reproduction, distribution and making available of published works in formats designed to be accessible to VIPs.</p> <p>Source: WIPO website</p>	<p>Burundi, Cambodia, Chad, Djibouti, Guinea, Haiti, Mauritania, Mozambique, Nepal, Senegal, Sierra Leone, Sudan, Togo.</p>	<p>Afghanistan, Bangladesh, Burkina Faso, Central African Republic, Comoros, Ethiopia, Kiribati, Lesotho, Liberia, Malawi, Mali, Rwanda, Sao Tome and Principe, Uganda.</p>
<p>Nagoya Protocol on Access and Benefit Sharing (2010)</p>	<p>provides a transparent legal framework for the effective implementation of one of the three objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilization of genetic resources.</p> <p>Source: Convention on Biological Diversity website</p>	<p>Somalia, Yemen.</p>	<p>Afghanistan, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Kiribati, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Sudan, Togo, Tuvalu, Uganda, United Republic of Tanzania, Zambia.</p>
<p>Nairobi Treaty on the Protection of the Olympic Symbol (1981)</p>	<p>Protection of the Olympic symbol – five interlaced rings – against use for commercial purposes without the authorization of the International Olympic Committee.</p> <p>Source: WIPO website</p>	<p>Benin, Madagascar, Zambia.</p>	<p>Ethiopia, Senegal, Togo, Uganda.</p>
<p>Nice agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks (1957)</p>	<p>Competent offices of the Contracting States must indicate in official documents and in any publication they issue in respect of the registration of marks the numbers of the classes of the Classification to which the goods or services for which the mark is registered belong.</p> <p>Source: WIPO website</p>		<p>Benin, Guinea, Malawi, Mozambique, United Republic of Tanzania.</p>

Paris Convention for the Protection of Industrial Property (1883)	Applies to industrial property in the widest sense, including patents, trademarks, industrial designs, utility models, service marks, trade names, geographical and the repression of unfair competition.  Source: WIPO website		Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Nepal, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Sudan, Togo, Uganda, United Republic of Tanzania, Yemen, Zambia.
Patent Cooperation Treaty (PCT) (1970)	Provides patent protection for an invention simultaneously in each of a large number of countries by filing an "international" patent application.  Source: WIPO website		Angola, Benin, Burkina Faso, Cambodia, Central African Republic, Chad, Comoros, Djibouti, Gambia, Guinea, Guinea-Bissau, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Sudan, Togo, Uganda, United Republic of Tanzania, Zambia.
Patent Law Treaty (2000)	Harmonize and streamline formal procedures in respect of national and regional patent applications and patents and, thus, to make such procedures more user friendly.  Source: WIPO website	Burkina Faso, Burundi, Gambia, Haiti, Madagascar, Malawi, Sao Tome and Principe, Sudan, Togo, Uganda, Zambia.	Liberia.
Rome Convention for the Protection of Performers, Production of Phonographs, and Broadcasting Organizations (1961)	Allows for limitations and exceptions performances for performers, in phonograms for producers of phonograms and in broadcasts for broadcasting organizations.  Source: WIPO website	Cambodia	Burkina Faso, Lesotho, Liberia, Niger, Togo.
Singapore Treaty on the Law of Trademarks (2006)	Create a modern and dynamic international framework for the harmonization of administrative trademark registration procedures.  Source: WIPO website	Burkina Faso, Central African Republic, Democratic Republic of Congo, Guinea, Haiti, Madagascar, Mauritania, Senegal, Togo.	Afghanistan, OAPI, Benin, Mali.
Strasbourg Agreement Concerning the International Patent Classification (1971)	Establishes the International Patent Classification (IPC) which divides technology into eight sections with approximately 80,000 subdivisions.  Source: WIPO website		Guinea, Malawi.
Trademark Law Treaty (1994)	Standardize and streamline national and regional trademark registration procedures.  Source: WIPO website	Senegal, Togo.	Burkina Faso, Guinea.
Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) (1995)	Constitutes Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization.  Source: WIPO website		Afghanistan, Angola, Bangladesh, Benin, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Democratic Republic of Congo, Djibouti, Gambia, Guinea, Guinea-Bissau, Haiti, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Senegal, Sierra Leone, Solomon Islands, Togo, Uganda, United Republic of Tanzania, Yemen, Zambia.
Universal Copyright Convention (UCC) (1952)	Provide for the adequate and effective, protection of the rights of authors and other copyright proprietors in literary, scientific and artistic works, including writings, musical, dramatic and cinematographic works, and paintings, engravings and sculpture.  Source: UNESCO website		Cambodia, Haiti, Lao PDR, Liberia, Malawi, Zambia.
Universal Copyright Convention (UCC) (1971)	Provide for the adequate and effective, protection of the rights of authors and other copyright proprietors in literary, scientific and artistic works, including writings, musical, dramatic and cinematographic works, and paintings, engravings and sculpture.  Source: UNESCO website		Bangladesh, Guinea, Niger, Rwanda, Senegal, Togo.

Convention Establishing the World Intellectual Property Organization (1967)	Establishment of WIPO. Source: WIPO website		Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Timor-Leste, Togo, Tuvalu, Uganda, United Republic of Tanzania, Yemen, Zambia.
International Convention for the Protection of New Varieties of Plants (UPOV Convention) (1961)	Provides the basis for members to encourage plant breeding by granting breeders of new plant varieties an intellectual property right: the breeder's right. Source: UPOV website		
International Convention for the Protection of New Varieties of Plants (UPOV Convention) (1978)	Provides the basis for members to encourage plant breeding by granting breeders of new plant varieties an intellectual property right: the breeder's right. Source: UPOV website		
International Convention for the Protection of New Varieties of Plants (UPOV Convention) (1991)	Provides the basis for members to encourage plant breeding by granting breeders of new plant varieties an intellectual property right: the breeder's right. Source: UPOV website		OAPI <sup>94</sup> , United Republic of Tanzania
Vienna Agreement Establishing an International Classification of the Figurative Elements of Marks (1973)	Competent offices of Contracting States must indicate in official documents and in any publication they issue in respect of the registration of marks the numbers of the categories, divisions and sections of the Classification to which the figurative elements of those marks belong. Source: WIPO website		Guinea.
Washington Treaty on Intellectual Property in Respect of Integrated Circuits (1989) (Not in force)	Establishment of a Union for the protection of layout-designs (topographies) of microchips. Source: WIPO website	Liberia, Zambia.	
WIPO Copyright Treaty (WCT) (1996)	Special agreement under the Berne Convention that deals with the protection of works and the rights of their authors in digital environment. Source: WIPO website		Afghanistan, Benin, Burkina Faso, Burundi, Comoros, Guinea, Kiribati, Madagascar, Mali, Sao Tome and Principe, Senegal, Togo, Uganda.
WIPO Performances and Phonograms Treaty (WPPT) (1996)	Deals with the rights of two kinds of beneficiaries, particularly in the digital environment: (i) performers (actors, singers, musicians, etc.); and (ii) producers of phonograms (persons or legal entities that take the initiative and have the responsibility for the fixation of sounds). Source: WIPO website		Afghanistan, Benin, Burkina Faso, Comoros, Guinea, Kiribati, Madagascar, Mali, Sao Tome and Principe, Senegal, Togo, Uganda,

Sources: WIPO website, FAO International Treaty on Plant Genetic Resources for Food and Agriculture; Convention on Biological Diversity; UNESCO Universal Copyright Convention; and International Convention for the Protection of New Varieties of Plants (UPOV) website

<sup>94</sup> Country members of OAPI are shown on UPOV website as members of UPOV although they have not signed or ratified the UPOV convention individually, available at UPOV // Web Presentation - UPOV.

**Annex 2: Selected IPRs Treaties, Policies, Agreements and Protocols at the regional and international level relevant to LDCs**

Treaty/Agreement/Protocol	Scope of Protection	Enforcement	Other Comments
COMESA Policy on Intellectual Property Rights	Copyrights (including computer software) Industrial Property such as: Patents Industrial Designs Trademarks and Service marks Layout Design Commercial names and designations Geographical Indication Unfair Competition	The purpose of the Policy is to encourage and promote the use and protection of intellectual property rights by COMESA members. It provides practical guidelines to achieve its objective.  However, there is no indication of enforceability against non-complying members under the Policy.	COMESA members who are also World Trade Organization members are through the Policy enjoined to comply with the provisions of WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) <sup>95</sup> and take full advantage of the flexibilities provided by TRIPS. Members will provide legislative measures to promote and protect industrial property rights. Promote harmonization of industrial property legislation within COMESA in view of the establishment of the Custom Union. The Policy specifically provides detailed guidelines for the protection of copyrights and copyright related industries. The Policy defines copyright as " an exclusive right granted to the owner for creative works of the mind for a limited period of time subject to exceptions and limitations. It is the right granted to literary, artistic and musical works" <sup>96</sup> . COMESA Secretariat is empowered to facilitate the harmonization of copyright laws among its member States <sup>97</sup> . The member States will provide the necessary legal and administrative framework for the proper administration and enforcement of copyright and related rights <sup>98</sup> . Member States will facilitate the commercialisation of copyright works, provide the infrastructure and offer competitive goods in the global market <sup>99</sup> .
EAC Treaty	Not primarily an IP instrument	The main treaty of the EAC. Its objective is to develop policies and programmes aimed at widening and deepening co-operation among the member States for their mutual benefit <sup>100</sup> .	The Treaty calls for the harmonization of IP laws within the REC for the protection of IPRs <sup>101</sup> .
EAC Customs Union Protocol	Not primarily an IP instrument	Established pursuant to Article 75 of the EAC Treaty. It established the EAC Customs Union as a transition stage to establish the Common Market.	Article 38 of the EAC Customs Union Protocol obligates member States to conclude a specialized Protocol on IP. In 2019, a draft IP Policy was considered and adopted by the East African Science and Technology Commission Governing Board Committee and awaits approval by the Council of Ministers of EAC <sup>102</sup> .
EAC Common Market Protocol	Not primarily an IP instrument. Defines IP to include: copyright and related rights, patents, layout designs of integrated circuits, industrial designs, new plant varieties, geographical indications, trade and service marks, trade secrets, utility models, traditional knowledge, genetic resources, traditional cultural expressions and folklore <sup>103</sup> .	Established pursuant to Article 76 of the EAC Treaty as the second transition stage to full integration within the Community.	The Protocol contains several provisions for the harmonization of IPRs. Members are obligated to cooperate in the field of IPRs and eliminate discriminatory practices in the administration of IPRs and to honour their obligations in other international IP related agreements. <sup>104</sup> Article 29 calls for the protection of cross-border investments and defines IP as an investment.

<sup>95</sup> Paragraph 6 COMESA policy on IPRs.

<sup>96</sup> Paragraph 13 COMESA policy on Copyrights and Copyright Related Industries.

<sup>97</sup> Paragraph 12 COMESA policy on Copyrights and Copyright Related Industries.

<sup>98</sup> Paragraph 39 COMESA policy on Copyrights and Copyright Related Industries.

<sup>99</sup> Paragraph 40 COMESA policy on Copyrights and Copyright Related Industries.

<sup>100</sup> Article 5 EAC Treaty.

<sup>101</sup> Article 103 (1)(i) EAC Treaty.

<sup>102</sup> 'Development Of The East African Regional Policy For Intellectual Property' (easteco) <<https://easteco.org/development-of-the-east-african-regional-policy-for-intellectual-property/>> accessed 25 July 2023.

<sup>103</sup> Article 43 EAC Common Market Protocol.

<sup>104</sup> Ibid

EAC Regional Intellectual Property Policy on the Utilisation of Public Health-Related WTO-TRIPS Flexibilities	Patent Trademarks Copyrights Trade secrets	It is a guide policy to ensure compliance and utility of the WTO-TRIPS.	The Policy guides EAC members on how their national IP legislation should be amended to enable them to fully utilise the Public Health-related WTO-TRIPS Flexibilities <sup>105</sup> . Provides for a transition period for LDCs to comply with patent protection of pharmaceutical products and processes in accordance with Article 66.1 of WTO-TRIPS, the Decision by the WTO Council for TRIPS of 27 June 2002, and Paragraph 7 of the Doha Declaration on the TRIPS Agreement and Public Health <sup>106</sup> . The Policy stipulates that all member States should provide for international exhaustion of patent rights, trademarks and copyrights <sup>107</sup> . Provides for grounds for harmonization of compulsory licencing and licencing <sup>108</sup> .
ECOWAS TRIPS Flexibilities Policy and Guidelines	Patent	Developed by the West African Health Organization (WAHO), the Policy assess existing policy and legislation gaps in ECOWAS member States that may create obstacles to the implementation of the TRIPS Agreement in relation to public health and access to essential medicines; makes necessary recommendations for upgrading of policies, rules and regulations to improve the use of the patent regime in ECOWAS by industry and research institutions; and examines the patent rules at the national level in member States and ascertain that they are in line with existing international best practices.	Through the Policy, ECOWAS member States are encouraged to amend their national legislations to implement policies and guidelines developed by ECOWAS/WAHO so as to take advantage of the TRIPS flexibilities. The Policy recommends the following: ECOWAS should establish a regional IP office to manage IP issues as well as an office for technology acquisition and promotion to nurture creative talents, technological advancements and competitiveness. The Regional Office should initiate strategies for technology evaluation, acquisition, transfer, promotion and support from developed countries to ECOWAS member States. The transfer of technology should not be restricted only to developed countries but to developing countries as well. LDC member States should take advantage of the opportunity for further extensions of the transition period and for technology transfer from developed countries. Development and strengthening of national competition laws in order to ensure that anti-competitive practices do not undermine the promotion of economic growth and freedom of trade. ECOWAS members should be mindful when signing bilateral trade agreements that provides for mandatory protection of test data but should take advantage of TRIPS flexibilities. Countries can meet their obligations of protecting test data by prohibiting “dishonest” use of data. ECOWAS should mandate that National Medicines Regulatory Authorities do not police intellectual property issues since patents are private rights. Protection of test data should not unreasonably prevent or hamper the development of generic medicines. No country should go beyond the minimum requirements for term of protection. Countries are encouraged not to extend existing patent protection beyond 20 years. Members are encouraged to make limited exceptions to patent rights provided the exceptions do not unreasonably conflict with the normal exploitation of the patent such as the research exception that allows researchers understand the invention fully and the regulatory exception that allows manufacturers of generic drugs to use the patented invention to obtain marketing approval from drug regulatory or public health authorities without the patent owner’s permission and before the patent protection expires. Members are encouraged to make best mode requirements under national patent legislation. Doctrines of international exhaustion should be incorporated in national legislations to allow for parallel importation whenever a patented product is placed in the market anywhere in the world. Members are encouraged to incorporate TRIPS Article 31 which provides for compulsory licensing into their national legislations, and both voluntary and non-voluntary licenses should be allowed for local production or export.

<sup>105</sup> ‘Regional Intellectual Property Policy on the Utilization of Public Health-Related WTO-TRIPS Flexibilities and the Approximation of National Intellectual Property Legislation’ <<http://repository.eac.int/bitstream/handle/11671/1847/EACTRIPS-Policy.pdf?sequence=1&isAllowed=y>> accessed 2 August 2023. “plainCitation”: “EAC-TRIPS-Policy.Pdf” <<http://repository.eac.int/bitstream/handle/11671/1847/EAC-TRIPS-Policy.pdf?sequence=1&isAllowed=y>> accessed 2 August 2023.”, “noteIndex”: 11, “citationItems”: [{"id": 318, “uris”: [“http://zotero.org/users/10793161/items/BXGYNBUEH”], “itemData”: {“id”: 318, “type”: “document”, “title”: “EAC-TRIPS-Policy.pdf”, “URL”: “http://repository.eac.int/bitstream/handle/11671/1847/EAC-TRIPS-Policy.pdf?sequence=1&isAllowed=y”, “accessed”: {“date-parts”: [“2023”, 8, 2]}}}], “schema”: “https://github.com/citation-style-language/schema/raw/master/csl-citation.json”}

<sup>106</sup> Section 2 EAC TRIPS Policy.

<sup>107</sup> Sections 7 (3), 10 and 11 EAC TRIPS Policy.

<sup>108</sup> Sections 8 and 9 EAC TRIPS Policy.

SADC Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights)	New varieties of plants (plant breeders' rights)	<p>Established pursuant to Article 5 of SADC Treaty and Article 24 SADC Protocol on Trade.</p> <p>By Article 22 of the SADC Treaty, the Protocol is binding on member States that are party to the Protocol<sup>109</sup>.</p>	<p>Plant breeders' right will be granted if the variety is distinct, uniform and stable<sup>110</sup>.</p> <p>Plant breeders' rights granted under the Protocol will be valid in all other member States<sup>111</sup>.</p> <p>Without prejudice to the right of member States to grant plant breeders' rights through their own national legislation, any variety which is the subject matter of a SADC plant breeders' right system shall not be subject of member State's national law<sup>112</sup>.</p> <p>SADC plant breeders right takes precedence over national rights for the same variety of plant<sup>113</sup>.</p> <p>The SADC Plant Breeders' Rights Office was established to administer the plant breeders' rights in the SADC region.</p>
Bangui Agreement - Organisation Africaine de la Propriété Intellectuelle (OAPI)	Copyright Patent Trademarks Utility Models Service Marks Industrial Designs Trade Names Geographical Indications Layout Designs of Integrated Circuits Plant Varieties and Microorganisms Unfair Competition <sup>114</sup> .	<p>Creates a uniform system for the registration, use and protection of IPRs in member States<sup>115</sup>.</p> <p>Applicable in its entirety to member States that ratifies or accedes to the Agreement<sup>116</sup>.</p> <p>Any dispute relating to the recognition, scope or exploitation of the IPRs provided for in the Agreement falls within the jurisdiction of the national courts of each member<sup>117</sup>.</p> <p>Dispute relating to the application of the Agreement may be settled by arbitration or mediation<sup>118</sup>.</p> <p>Membership open to any African State that is a member of Convention Establishing the World Intellectual Property Organization, the Paris Convention for the Protection of Industrial Property, the Berne Convention for the Protection of Literary and Artistic Works and/or the Universal Copyright Convention and the Patent Cooperation Treaty<sup>119</sup>.</p>	<p>The Agreement and its annexes shall serve as laws governing IPRs in the member States and shall rescind or prevent entry into force contrary national provisions. Annex relating to copyright is a minimum statutory framework<sup>120</sup>.</p> <p>Non-nationals shall enjoy the provisions of this Agreement and its annexes under the same conditions as nationals<sup>121</sup>.</p> <p>Application for the registration of IPRs shall be filed directly with the OAPI office<sup>122</sup>.</p> <p>Any filing with one member State in accordance with the Agreement and its Annexes shall be equivalent to a national filing in each member State.</p> <p>Any international filing in accordance with the provisions of the Patent Cooperation Treaty, Madrid Agreement and the Hague Agreement in one member State shall have the effect of national deposit in each member State that is also party to the international Treaty and Agreements<sup>123</sup>.</p> <p>There is established a High Commission of Appeal that rules on appeals on rejection of application, rejection of requests for the maintenance or extension of terms of protection, rejection of requests for restoration and decisions on oppositions<sup>124</sup>.</p>
Lusaka Agreement - The African Regional Intellectual Property Organisation (ARIPO)	Patents Utility Models Industrial Designs Trademarks Geographical Indications Trade Names Layout Designs of Integrated Circuits Undisclosed Information (Trade Secrets)	<p>Its objective is to harmonise and develop intellectual property laws within its member States.</p> <p>Membership is open to all members of the United Nations Economic Commission for Africa or the African Union<sup>125</sup>.</p> <p>Any disputes arising out of the interpretation or application of any of the provisions of this Agreement which cannot be settled by the Administrative Council shall be submitted to the Council of Ministers, whose decision on the matter shall be final and binding on all the members<sup>126</sup>.</p>	<p>Establishes the Council of Ministers, Administrative Council and the Secretariat to collectively administer the ARIPO to achieve its objectives.</p> <p>Members undertake to take all steps that are within their power to give effect to the Agreement and in particular to pay their annual contribution and special contributions as may be determined by the Council of Ministers, facilitate the exchange and dissemination of information and provide personnel, training and research facilities to ARIPO<sup>127</sup>.</p>

<sup>109</sup> Angola, Botswana, Democratic Republic of Congo, Eswatini, Lesotho, Mozambique, Namibia, Tanzania and Zambia.

<sup>110</sup> Article 6 (1) Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights).

<sup>111</sup> Article 3 (2) Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights).

<sup>112</sup> Article 3 (3) and (4) Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights).

<sup>113</sup> Article 3 (5) Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights).

<sup>114</sup> Article 6 (1) Bangui Agreement.

<sup>115</sup> Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo, Equatorial Guinea, Gabon, Guinea, Guinea-Bissau, Ivory Coast, Mali, Mauritania, Niger, Senegal, Togo.

<sup>116</sup> Article 6 (2) Bangui Agreement.

<sup>117</sup> Article 4 (1) Bangui Agreement.

<sup>118</sup> Articles 4 (2) and 34 Bangui Agreement.

<sup>119</sup> Article 22 Bangui Agreement.

<sup>120</sup> Article 5 (2) Bangui Agreement.

<sup>121</sup> Article 3 (5) Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights).

<sup>122</sup> Article 8 (1) Bangui Agreement.

<sup>123</sup> Article 9 Bangui Agreement.

<sup>124</sup> Article 31 Bangui Agreement.

<sup>125</sup> Article IV Lusaka Agreement.

<sup>126</sup> Article XIII Lusaka Agreement.

<sup>127</sup> Article XI Lusaka Agreement.

Harare Protocol on Patents and Industrial Designs	Patents Industrial Designs Utility Models	Further to the Lusaka Agreement, the Harare Protocol serves as a common organ necessary for the co-ordination, harmonisation, development and protection of patent, industrial designs and utility models within ARIPO members that are parties to the Harare Protocol.	Established to grant patents, to register utility models and industrial designs and to administer such patents, utility models and industrial designs on behalf of members <sup>128</sup> .  Patents, utility models and industrial designs registered by virtue of the Protocol shall have the same effect as a national patent granted by member States <sup>129</sup> .  Applications may be filed at the ARIPO office or the national IP office of member States. Where it is filed at the national IP office, the national office shall within 1 month transmit the application to ARIPO office.  An international application under the Patent Cooperation Treaty shall be considered to be an application for the grant of a patent under the Harare Protocol. The provisions of the PCT and the Harare Protocol shall apply together but in case of conflict, the PCT shall apply <sup>130</sup> .  A Board of Appeal is established to consider and decide on any appeal lodged by the applicants.
AfCFTA Protocol on Intellectual Property	Plant Variety Protection, Geographical Indications, Trademarks, Patents, Utility Models, Industrial Designs, Undisclosed Information including trade secrets, Layout Designs (topographies) of Integrated Circuits, Copyright and related rights, Traditional Knowledge, Traditional Cultural Expressions, and Genetic Resources, and emerging technologies and other emerging issues on intellectual property rights <sup>131</sup> .	The general objective is to support the realization of the objectives of the AfCFTA by establishing harmonized rules and principles for the promotion, protection, cooperation, and enforcement of IPRs <sup>132</sup> .  Any dispute arising from the enforcement of the Protocol shall be settled in accordance with the AfCFTA Protocol on Dispute Settlement.	State Parties shall cooperate in the field of intellectual property rights to support intra-African trade, regional value chain, industrialisation and economic growth.  State Parties are obligated to ensure the availability of legal mechanism to enforce and protect IPRs <sup>133</sup> .  IPRs shall be exhausted when a product covered IPR, has been introduced on the AfCFTA market by the right holder or with the right holder's consent <sup>134</sup> .  Members are enjoined to accord Most-Favoured Treatment and National Treatment <sup>135</sup> .  Members are to implement the provisions of the Protocol upon its entry into force. However, LDCs are granted an extended period of three years after entry into force to comply. Additionally, LDCs are not required to provide protection of pharmaceutical patents and pharmaceutical test and other data for a period of time provided for in the relevant international treaties <sup>136</sup> .  In addition to the IP Protocol, members are enjoined by Article 40 to negotiate specific annexes on protected IPRs in the Protocol. There shall be Annexes on Plant Variety Protection, Geographical Indications, Marks, Copyrights and Related Rights, Patents, Utility Models, Industrial Designs and Models and Traditional Knowledge, Traditional Cultural Expression and Genetic Resources <sup>137</sup> .  Member States may take any action which it considers necessary for the protection of its essential public health interests during any emergency, including epidemics, pandemics <sup>138</sup> .  Recognizing the importance of capacity building, the Protocol enjoins the AfCFTA Secretariat to work with member States, RECs, regional intellectual property organizations, and relevant stakeholders to coordinate the provision of technical assistance, undertake activities to enhance capacity building, and facilitate the implementation of the Protocol <sup>139</sup> .  Member States shall notify the AfCFTA Secretariat of their intellectual property laws and any international, regional and bilateral agreements pertaining to or affecting IP with other State Parties and third parties to which they are signatory promptly after the entry into force of the Protocol <sup>140</sup> .  An AfCFTA IP Office shall be established, subject to a Decision of the Assembly of Heads of State and Government of the African Union. The IP Office shall recognize and cooperate with existing and emerging national, regional and international IP Offices <sup>141</sup> .

<sup>128</sup> Section 1 (1) Harare Protocol.

<sup>129</sup> Section 1 (3) Harare Protocol.

<sup>130</sup> Section 3bis (2) Harare Protocol.

<sup>131</sup> Angola, Botswana, Democratic Republic of Congo, Eswatini, Lesotho, Mozambique, Namibia, Tanzania and Zambia.

<sup>132</sup> Article 6 (1) Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights).

<sup>133</sup> Article 3 (2) Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights).

<sup>134</sup> Article 3 (3) and (4) Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights).

<sup>135</sup> Article 3 (5) Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights).

<sup>136</sup> Article 6 (1) Bangui Agreement.

<sup>137</sup> Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo, Equatorial Guinea, Gabon, Guinea, Guinea-Bissau, Ivory Coast, Mali, Mauritania, Niger, Senegal, Togo.

<sup>138</sup> Article 6 (2) Bangui Agreement.

<sup>139</sup> Article 4 (1) Bangui Agreement.

<sup>140</sup> Articles 4 (2) and 34 Bangui Agreement.

<sup>141</sup> Article 31 AfCFTA IP Protocol.

ASEAN IPR Action Plan 2016-2025 (AIPRAP)	Copyrights Industrial Design Patent Trademark Geographical Indications	Created by the ASEAN Working Group on Intellectual Property Cooperation (AWGIPC). It aims to harmonise and improve the IP system in the ASEAN Community.	<p>The ASEAN IPR Action Plan 2016-2025 aims to create a unified regional IP system for the registration, use and protection of IPRs.</p> <p>The Plan has 4 strategic goals with 19 initiatives and sub-initiatives.</p> <p>The Strategic Goals are: Strategic Goal 1: A more robust ASEAN IP System is developed by strengthening IP Offices and building IP infrastructures in the region;</p> <p>Strategic Goal 2: Regional IP platforms and infrastructures are developed to contribute to enhancing the ASEAN Economic Community;</p> <p>Strategic Goal 3: An expanded and inclusive ASEAN IP Ecosystem is developed;</p> <p>Strategic Goal 4: Regional mechanisms to promote asset creation and commercialisation, particularly geographical indications and traditional knowledge are enhanced.</p> <p>According to the AWGIPC, as of March 2021, 18% of the strategic goals and initiatives (deliverables) under the AIPRAP have been completed,</p> <p>64% are ongoing and 18% have not started<sup>142</sup>.</p> <p>By the review, in March 2021, the following deliverables had been completed:</p> <ul style="list-style-type: none"> <li>(i) Deliverable 2.5 – Develop ASEAN Common Guidelines on Industrial Design Examination</li> <li>(ii) Deliverable 8.1 – Establishment of a regional network of patent libraries within schools and universities in member States, to increase access to global scientific and technology information for research and development</li> <li>(iii) Deliverable 9.2 – Conduct a Feasibility Study for an ASEAN Trademark Registration System</li> <li>(iv) Deliverable 10.1 - Ensure IP Offices' patent, trademark, industrial design and copyright databases and relevant information are easily accessible to their customers, partners, industry, and the public.</li> <li>(v) Deliverable 11.1 - Develop a checklist to ensure that relevant information is updated regularly on the ASEAN IP Portal</li> <li>(vi) Deliverable 11.2 - Integrated searches of ASEAN IP databases can be done from the ASEAN IP Portal</li> <li>(vii) Deliverable 12.4 - Deliverable National internal guidelines for enforcement consistent with the civil, criminal, and administrative structures of member States are drawn up based on best practices identified through information sharing among national agencies in member States that are tasked with IP enforcement</li> <li>(viii) Deliverable 12.6 - Develop a coordination mechanism to enhance enforcement operations</li> <li>(ix) Deliverable 16.1 – member States conduct a study on supporting schemes to encourage IP protection and acquisition by MSMEs and the creative sectors and the effectiveness of the various schemes with the objective of adopting suitable and relevant measures</li> <li>(x) Deliverable 16.2 – Creative ASEAN</li> </ul>
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<sup>142</sup> 'ASEAN-IPR-Action-Plan-2016-2025-v2.0.Pdf' <<https://www.aseanip.org/docs/default-source/content/ASEAN-IPR-Action-Plan-2016-2025-v2.0.pdf>> accessed 28 July 2023.

WTO TRIPS	<p>Copyright and Related Rights</p> <p>Trademarks</p> <p>Geographical Indications Industrial Designs</p> <p>Patents</p> <p>Layout-Designs of Integrated Circuits Protection of Undisclosed Information</p> <p>Control of Anti-Competitive Practices in Contractual Licences</p>	<p>Creates a minimum standard of protection to IPRs which WTO members should afford IPRs in their territories.</p> <p>Any dispute arising from the application of TRIPS shall be settled under the WTO Dispute Settlement System.<sup>143</sup></p>	<p>Does not create any obligation on exhaustion of IPRs<sup>144</sup>.</p> <p>members to comply with the Berne Convention except Article 6bis of the Convention which provides for the moral rights<sup>145</sup>.</p> <p>Also incorporates compliance with the Paris Convention for the protection of Trademarks.</p> <p>members are obligated to provide to rights holders' legal means for the enforcement and protection of their IPRs<sup>146</sup>.</p> <p>LDCs are granted special and preferential treatment and are not required to fully comply with TRIPS until 1 July 2034<sup>147</sup>.</p> <p>To facilitate the implementation of TRIPS, developed country members shall provide on request technical and financial cooperation to developing countries and LDCs<sup>148</sup>.</p>
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<sup>143</sup> Article 64 TRIPS

<sup>144</sup> Article 6 TRIPS

<sup>145</sup> Article 9 TRIPS

<sup>146</sup> Article 42 TRIPS

<sup>147</sup> 'WTO Members Agree to Extend TRIPS Transition Period for LDCs until 1 July 2034' <[https://www.wto.org/english/news\\_e/news21\\_e/trip\\_30jun21\\_e.htm](https://www.wto.org/english/news_e/news21_e/trip_30jun21_e.htm)> accessed 19 July 2023.

<sup>148</sup> Article 67 TRIPS

**Annex 3: Legislation on Utility Models in LDCs**

No.	Country	Adoption of utility models' legislation	Source	Year
1.	Afghanistan	Did not adopt		
2.	Angola	Law No. 3/92 of 1992 on Industrial Property <sup>149</sup> .	WIPO website	1992
3.	Bangladesh	Did not adopt		
4.	Benin	Did not adopt		
5.	Bhutan	Did not adopt		
6.	Burkina Faso	Did not adopt		
7.	Burundi	1. Law No. 1/13 of 2009 relating to Industrial Property in Burundi <sup>150</sup> . 2. Joint Order No. 540/750/1582 of 2012 on the Fees of Services Rendered in respect in respect of Industrial Property.	WIPO website	2009 2012
8.	Cambodia	1. Law on Patents, Utility Models and Industrial Designs <sup>151</sup> . 2. Prakas on the Procedure for the Grant of Patents and Utility Model Certificates. 3. Law on Amendments to the Law on Patents, Utility Models and Industrial Designs. 4. Prakas on Management and Procedures for the Grant of Patent and Utility Model Certificate.	WIPO website	2003 2007 2017 2019
9.	Central African Republic	Agreement of 24 February 1999, Revising the Bangui Agreement of 2 March 1977 on the Creation of an African Intellectual Property Organization <sup>152</sup> .		2002
10.	Chad	Did not adopt		
11.	Comoros	Did not adopt		
12.	Democratic Republic of Congo	Did not adopt		
13.	Djibouti	Did not adopt		
14.	Eritrea	Did not adopt		
15.	Ethiopia	1. Inventions, Minor Inventions and Industrial Designs Proclamation No. 123/1995 <sup>153</sup> 2. Inventions, Minor Inventions and Industrial Designs Regulations	WIPO website	1995 1996
16.	Gambia	1. Industrial Property Act No. 12 of 1989 <sup>154</sup> 2. Industrial Property Regulations	WIPO website	1989 2010
17.	Guinea	Did not adopt		

<sup>149</sup> Article 18 of the law provides an exhaustive list of specific sectors that should not be protected as utility models, the term of registration is five years for industrial design only and specific requirements.

<sup>150</sup> Article 103 requires a "sufficiently inventive step" and being "industrially applicable" for a product to be registered as a utility models. Article 113 excludes several sectors from registration as a utility model.

<sup>151</sup> The law added a more detailed explanation beside the novelty and industrial applicability requirements in article 69, the article further states that it may be or may relate to a product or a process. The utility model certificate shall expire after 7 years from the date of filing under article 73.

<sup>152</sup> The law provides a detailed process of registering utility models. Article 12 of the law provides for the ability to convert any patent application that fulfills the conditioned stated in Annex II into an application for a utility model. Novelty and industrial applicability are the two main requirements imposed by articles 2 and 3 of Annex II of the law. Article 4 of Annex II does allow

the registration of utility models for specific subject matters which include a model that is contrary to public policy, morality and health. The term of protection as a utility model is Ten years from the filing date of the application according to article 6 of the Annex.

<sup>153</sup> The law described invention that are granted utility models certificate as minor inventions. Article 38 required novelty & industrial applicability for the registration of utility models. Article 40 excluded any change in the shape, proportions or material of the patented object, mere replacement of elements in a known combination which does not allow an improvement in its use or intended functions and minor inventions violating public order from utility model protection. Article 44 states that the utility model certificate is granted for a period of five years, which may be renewed for a further five years period provided that proof is furnished that the minor invention is being worked in Ethiopia.

<sup>154</sup> Article 17(1) of the law qualifies "new" and "industrially applicable" inventions for a utility model certificate. Article 17(3) limits the protection of utility models to 7 years without any possibility of renewal. Article 18 allows for conversion between patent and utility model applications before the grant or refusal of the original application. Article 17(4) grants the competent court the power to invalidate the utility model certificate based on several grounds including violation of public order and morality.

18.	Guinea-Bissau	Decree Law No. 6/96 of 1996 <sup>155</sup> .	WIPO website	1996
19.	Haiti	Did not adopt		
20.	Kiribati	Did not adopt		
21.	Lao PDR	Intellectual Property Law No. 38/NA of 2017 <sup>156</sup> .	WIPO website	2017
22.	Lesotho	1. Industrial Property Regulations 1989 <sup>157</sup> .	WIPO website	1989
		2. Industrial Property Order of 1989 as amended by Act No. 4 of 1997 <sup>158</sup>		1997
23.	Liberia	Liberia Intellectual Property Act 2016 <sup>159</sup> .	WIPO website	2016
24.	Madagascar	Did not adopt		
25.	Malawi	Did not adopt		
26.	Mali	Decree Implementing the Law on the protection of Industrial property No. 87-18/AN-RM of 1987 <sup>160</sup> .	WIPO website	1978
27.	Mauritania	Did not adopt		
28.	Mozambique	Industrial Property Code by decree No. 47 of 2015 <sup>161</sup> .	WIPO website	2016
29.	Myanmar	The patent Law No. 7 of 2019 <sup>162</sup> .	WIPO website	2019
30.	Nepal	Did not adopt		
31.	Niger	1. Agreement of 24 February 1999, Revising the Bangui Agreement of 2 March 1977 on the Creation of an African Intellectual Property Organization <sup>163</sup> .	WIPO website	2002
		2. Regulations of 24 February 1999, under the Agreement revising the Bangui Agreement of 2 March 1977 on the Creation of an African Intellectual Property Organization.		2002
32.	Rwanda	Law No. 31/2009 of 2009 on the protection of Intellectual Property <sup>164</sup> .	WIPO website	2019

<sup>155</sup> Article 15 of the law states specific provisions that apply to utility model. The requirements are novelty and industrial applicability for granting protection. The term of protection is 7 years from the date of filing the application. Article 15 also excludes article 2 (on requirements to grant protection for patents) and article 5 (on the application process of patents) from applying to utility models.

<sup>156</sup> Article 3 of the law defines the notion as utility innovation which involves simpler steps than regular inventions. Article 14 states three conditions for the eligibility of a utility innovation for a petty patent: being a new innovation, have a new technical improvement and being applicable in industry, handicraft, agriculture, fishery, commerce, services, etc. Article 21 excludes diagnostic, therapeutic and surgical methods for the treatment of humans or animals and plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals provided however, that such subject matter may constitute an element of an invention or utility innovation. The same article also excludes utility innovations that contradicts with culture, fine traditions, security and peace of the Lao PDR. When utility innovation is granted petty patent protection, the term of protection is 10 years from the date of filing the application for registration.

<sup>157</sup> Regulation 33(2) permits the conversion of a patent application to a utility model application and vice versa. When an application for patent is converted into a utility model one, the examination of the application will be limited to the requirements of novelty, industrial applicability and public order and morality.

<sup>158</sup> Article 18(1) states two requirements for the invention qualified for utility model certificates: being "new" and "industrially applicable". Similar to the industrial property Act of Gambia, utility model certificates expire after 7 years from the date of the filing of the application, without any possibility of renewal.

<sup>159</sup> The act defines utility models in section 3 as an exclusive right granted for an invention which allows the right holder to prevent others from commercially using the protected invention without his authorization for a limited period of time. The act clearly states in section 13 that the purpose of such section is the promotion of inventive and innovative activities, to facilitate the acquisition of technology through the grant and regulation of patents and utility models. Conversion between patents and utility models application is allowed under section 13.29.

<sup>160</sup> Article 2 of the decree mentions, without further elaboration, that the National Directorate of industry shall accept the applications for patents, certificates of addition, utility models and appellations of origin of applicants domiciled on the national territory.

<sup>161</sup> The law defines utility models as an invention that gives an object or part thereof a configuration, structure, mechanism or layout resulting in a functional improvement in its utility or manufacture. Article 65 allows conversion of applications. Article 79 considers patents granted by ARIPO a national patent and acknowledges that utility models are governed by the Harare protocol. Article 96 allows every invention which involves a significant inventive step and has an industrial application is eligible for protection as a utility model, excluding "pharmaceutical and agro- pharmaceutical products". The law further assures the flexibility of utility models according to article 100 stating that "the administrative procedure relating to applications for utility models shall be simpler and faster than those applicable to patent applications" and that "the time periods relating to opposing the grant of the utility model, reply to the opposition and reply to notices of provisional refusal shall be thirty days". The law provides for one of the longest durations of protection of utility models which is 15 years from the date of filing the application according to article 103.

<sup>162</sup> The definition of the notion in the law is "the technical creation that consists of a new shape or configuration of an object or of the component of an object that increases its functionality or utility". The two requirements of novelty and industrial applicability are presented in the law under article 80(a). Article 8(b) excluded four inventions from utility models protection: (i) procedures; (ii) chemical, pharmaceutical, biological, metallurgical or any other kind of substances or compounds; (iii) items excluded from patent protection in accordance with this Law; (iv) sculptures, architectures or ornaments existing in nature. The duration of utility model protection is 10 years from the filing date of the application.

<sup>163</sup> Article 8(4) states that utility models and patents have the same effect provided for in the Bangui agreement meaning that it would apply in each state as its national law. The agreement allows the conversion of any patent application that fulfills the conditions mentioned in Annex II to utility model applications according to article 12. Article 1 of Annex II of the agreement specifies novelty and industrial applicability as the two main requirement for granting utility model protection. The term of protection under the agreement is 10 years from the filing date of the application according to article 6 of annex II.

33.	<b>Sao Tome and Principe</b>	Intellectual Property Code by decree law No. 23/2016 <sup>165</sup> .	WIPO website	2016
34.	<b>Senegal</b>	1. Agreement of 24 February 1999, Revising the Bangui Agreement of 2 March 1977 on the Creation of an African Intellectual Property Organization. 2. Regulations of 24 February 1999, under the Agreement revising the Bangui Agreement of 2 March 1977 on the Creation of an African Intellectual Property Organization.	WIPO website	2002 2002
35.	<b>Sierra Leone</b>	The Patents and Industrial Design Act No. 10 of 2012 <sup>166</sup> .	WIPO website	2012
36.	<b>Solomon Islands</b>	Did not adopt		
37.	<b>Somalia</b>	Did not adopt		
38.	<b>South Sudan</b>	Did not adopt		
39.	<b>Sudan</b>	Did not adopt		
40.	<b>Timor-Leste</b>	Did not adopt		
41.	<b>Togo</b>	1. Law No. 2001-013 of 2001 authorizing the Ratification of Bangui Agreement of 2 March 1977 on the Creation of an African Intellectual Property Organization. 2. Law on the Establishment of the Code of Artisanic Handicraft in the Togolese Republic.	WIPO website	2001 2012
42.	<b>Tuvalu</b>	Did not adopt		
43.	<b>Uganda</b>	1. The Industrial Property Act No. 3 of 2014 <sup>167</sup> . 2. The Industrial Property Regulations No. 12 of 2017.	WIPO website	2014 2017
44.	<b>United Republic of Tanzania</b>	1. The Patents Registration Act (Chapter 217) as amended by G.N. No. 262 of 1995 <sup>168</sup> . 2. The Zanzibar Industrial Property Act of 2008 <sup>169</sup> .	WIPO website	1995 2008

<sup>164</sup> The definition of innovation or utility model in the law is an idea of a creator “a creator of the utility model or an innovator” which, in practice, provides the solution to a particular problem in the technical field. It is an invention of a lower inventive level that does not meet the rigorous criteria of a patentable invention. An innovation (or utility model) may consist of, or relate to, a product or a process. Article 56 requires the satisfaction of two requirements “being new” and “industrially applicable”. Article 59 excludes 9 sectors from utility model protection: (1) discoveries, scientific theories and mathematical methods; (2) schemes, rules or methods for doing business, performing purely mental acts or playing games; (3) methods for treatment of the human or animal body by surgery or therapy, as well as diagnostic methods practiced on the human or animal body; this provision shall not apply to products for use in any of those methods; (4) natural substances, even if purified, synthesized or otherwise isolated from nature; this provision shall not apply to the processes of isolating those natural substances from their original environment; (5) known substances for which a new use has been discovered; this provision shall not apply to the use itself, where it constitutes an innovation (or utility model) under article 5(8) of this Law; (6) plants and animals, including their parts, other than micro-organisms, and essentially biological processes for the production of plants or animals and their parts, other than non-biological and microbiological processes; (7) animal and plant varieties; (8) pharmaceutical products in accordance with the International Conventions to which Rwanda is party; (9) innovations whose commercial use is contrary to public order and to morality. Article 60 refers to the matter of utility model ownership and states that it belongs to the inventor. Article 83 provides an expiry date of utility model protection which is 10 years after the filing date.<sup>166</sup> Article 3 of the law defines the notion as utility innovation which involves simpler steps than regular inventions. Article 14 states three conditions for the eligibility of a utility innovation for a petty patent: being a new innovation, have a new technical improvement and being applicable in industry, handicraft, agriculture, fishery, commerce, services, etc. Article 21 excludes diagnostic, therapeutic and surgical methods for the treatment of humans or animals and plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals provided however, that such subject matter may constitute an element of an invention or utility innovation. The same article also excludes utility innovations that contradicts with culture, fine traditions, security and peace of the Lao PDR. When utility innovation is granted petty patent protection, the term of protection is 10 years from the date of filing the application for registration.

<sup>165</sup> Article 122 requires for eligibility for protection as a utility model that every invention which involves a significant inventive step and has an industrial application. Two sectors are excluded from utility model protection under article 124: (1) Inventions involving biological material; (2) Inventions involving chemical or pharmaceutical substances or processes. The validity of utility model protection is 5 years from application submission date according to article 130.

<sup>166</sup> The prevailing requirements of novelty and industrial applicability are imposed under article 36(1) of the act. Article 36(3) limited utility model certificate term to 7 years after the date of filing the application.

<sup>167</sup> Article 122 requires for eligibility for protection as a utility model that every invention which involves a significant inventive step and has an industrial application. Two sectors are excluded from utility model protection under article 124: (1) Inventions involving biological material; (2) Inventions involving chemical or pharmaceutical substances or processes. The validity of utility model protection is 5 years from application submission date according to article 130.

<sup>168</sup> The prevailing requirements of novelty and industrial applicability are imposed under article 36(1) of the act. Article 36(3) limited utility model certificate term to 7 years after the date of filing the application.

<sup>169</sup> The law offers a detailed definition to utility models: any form, configuration or disposition of element of some appliance, utensil, tool, electrical and electronic circuitry, instrument, handicraft mechanism or other object or any part of it allowing a better or different functioning, use, or manufacture of the subject matter or that gives some utility, advantage, environmental benefit, saving or technical effect not previously available in Uganda; and includes microorganisms or other self-replicable material, products of genetic resources and herbal as well as nutritional formulations which give new effects. Article 69(1) only qualifies new and industrially applicable inventions for a utility model certificate. Expiration of the certificate is at the end of the tenth year from the date of granting the utility model with no option to renew under article 69(3). Article 70 allows conversion of patent applications to application for utility model certificates, and vice versa.

45.	<b>Yemen</b>	Law No. 2 of 2011 on Patents, Utility Models, Layout Designs of Integrated Circuits and Undisclosed Information <sup>170</sup> .	WIPO website	2011
46.	<b>Zambia</b>	The Patents Act No. 40 of 2016 <sup>171</sup> .	WIPO website	2016

Source: WIPO

<sup>170</sup> Article 75 allows the conversion of patent applications or applications for utility certificates.

<sup>171</sup> The act provides a clear definition of utility models: a technical creation that consists of a new shape or configuration of an object or of a component of an object that increases its functionality or utility. Article 17(1) of the act imposes 3 requirements for the registration of an invention as a utility model: novelty, involving a sufficiently inventive step and industrial applicability. Article 18(1) acknowledges that the right to utility model protection is for the inventor. Under article 24(1), the utility model certificate expires after 10 years from the filing date.

<sup>172</sup> The law provides a straightforward definition of a utility model as an intellectual property right with less stringent patentability requirements to protect an invention. Article 110 provides that utility model certificates are granted for an invention which is new, capable of industrial application and complies with the relevant provisions of this Act. Article 111(3) limits the term of a utility model certificate to ten years from the date of filing of the application. Article 113(1) provides that A utility model granted by ARIPO, in accordance with the Harare Protocol, shall have effect in Zambia in a like manner as a utility model granted in accordance with this Act, except where the Registrar communicates to ARIPO a decision, in accordance with the Harare Protocol, that such a utility model shall not have legal effect in Zambia.

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