

A New Look At Intellectual Property And Innovation In Africa

By Patrick Terroir

Africa: Dawn of a New Era

Africa is a large continent with 54 countries. A solid average growth rate of more than five per cent over the past 15 years bears witness to the region's impressive economic potential. A growing labour force and a large and emerging consumer market hold the promise of significant further growth opportunities. Yet a myriad of challenges need to be addressed in order to reap these potential gains. Africa has all the ingredients to make this happen, and decisions and actions taken today will determine whether Africa will succeed in achieving higher levels of prosperity. (The Africa Competitiveness Report 2015, WEF)

In 1950, only nine per cent of the world's population was African but the African population is expected to grow at the highest rate in the 21st century (from 1.2 billion in 2015, to nearly 2.5 billion in 2050 equaling the Asian population in 2100 with more than 4 billion people). Africa's under-18 population will swell by two-thirds to reach almost a billion by 2050 and about 40 per cent of all children of the world will be in Africa.

IP Desert

Africa hosts a wide spectrum of cultural, ethnic, geographic, and economic differences, as such, provides a challenge to anyone seeking to understand the continent's intellectual property (IP) environment. In many African countries, intellectual property protection is undeveloped, ineffective, expensive and unenforced and in some African countries there exists uncertainty on protection of IP and the threat of innovation being stolen away from inventors. There are, however, African countries where IP systems are operational and enforced.

As shown in the Figure 1 and Table 1, the volume of patents filed in Africa is very low and all the more so because most of these are made by non-residents. As one study quotes: "most patent applications filed were drafted by foreign patent lawyers, examined at the PCT Office in Geneva, and mailed to African capital cities simply for filing."¹

This small patent production is consistent with the weak percentage of R&D expenditure in African coun-

tries which is on average well under one per cent. See Table 2.

But the situation is not identical for all the countries and, as shown in the map below portraying the density of scientific publications, the North and South of Africa, roughly speaking, are ahead of the rest of the continent (South Africa and Egypt dominating Africa's scien-

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Figure 1. A4 Shares By Region, 2014

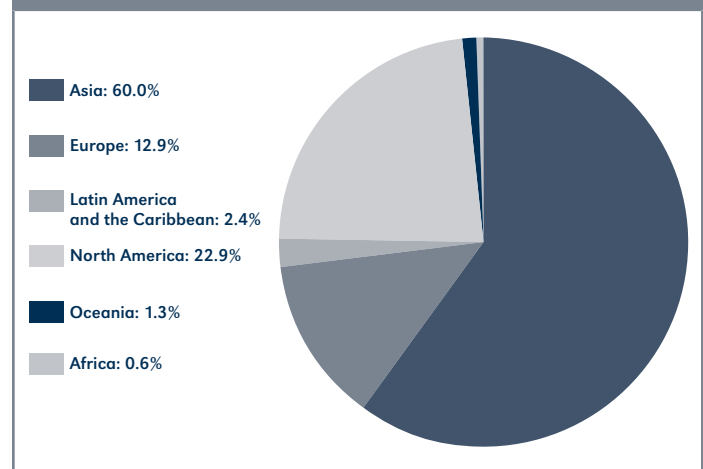


Table 1. Patent Applications, 2013

| Organization or Country | Total | Residents | % | Non Residents | % |
|---|-------|-----------|-----|---------------|-----|
| African Intellectual Property Organization | 552 | 89 | 16% | 463 | 84% |
| African Regional Intellectual Property Organization | 692 | 5 | 1% | 687 | 99% |
| South Africa | 7295 | 638 | 9% | 6657 | 91% |
| Egypt (2012) | 2211 | 683 | 31% | 1528 | 69% |
| Morocco | 1144 | 316 | 27% | 828 | 73% |
| Nigeria | 919 | 50 | 5% | 869 | 95% |
| Algeria | 900 | 119 | 13% | 781 | 87% |

Source : WIPO

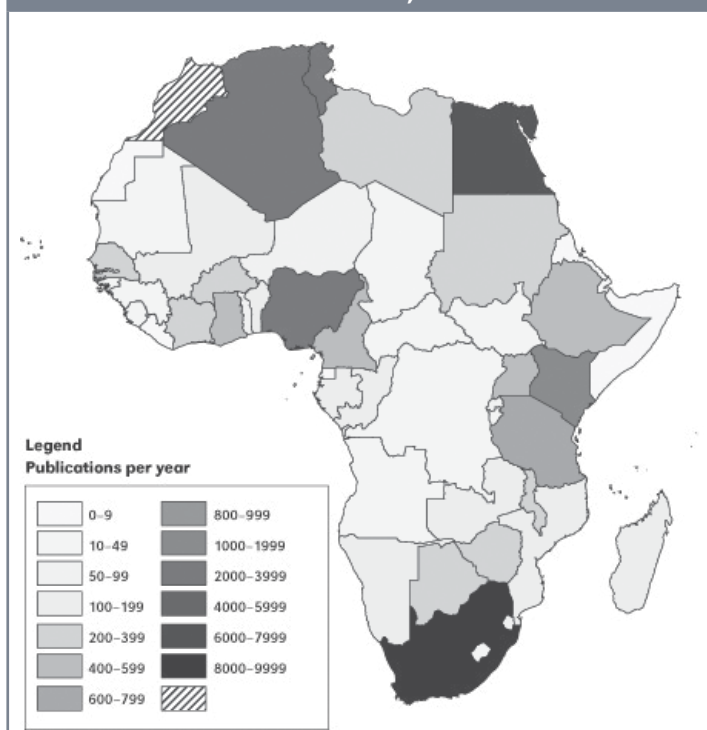
1. Jeremy de Beer, Chris Armstrong, Chidi Oguamanam and Tobias Schonwetter, "Innovation And Intellectual Property: Collaborative Dynamics In Africa," (2014).

Table 2. Gross Domestic Public Expenditure On R&D (Public GERD), 2010

| Countries | Survey Year | Public GERD (PPP\$ M) | Public GERD % of GDP | Public GERD Per Capita (PPP\$) |
|--------------|-------------|-----------------------|----------------------|--------------------------------|
| Angola | 2011 | 90.4 | 0.08% | 4.61 |
| Ethiopia | 2010 | 176.3 | 0.21% | 2.13 |
| Ghana | 2010 | 153.4 | 0.38% | 6.29 |
| Kenya | 2010 | 519.6 | 0.78% | 12.83 |
| Malawi | 2010 | 134.4 | 1.10% | 9.02 |
| Mali | 2010 | 112.4 | 0.66% | 7.32 |
| Mozambique | 2010 | 90.0 | 0.42% | 3.85 |
| Senegal | 2010 | 108.9 | 0.45% | 8.76 |
| South Africa | 2010 | 1991.8 | 0.38% | 39.73 |
| Tanzania | 2010 | 322.4 | 0.52% | 7.19 |
| Togo | 2010 | 15.3 | 0.25% | 2.50 |
| Uganda | 2010 | 152.1 | 0.32% | 4.55 |
| Zimbabwe | 2012 | 143.1 ^z | | |

Source: African Innovation Outlook, NEPAD, 2014

Figure 2. Map Of Scientific Output Of The African Union, 2005-2010



Source: Assessment of Scientific Production in the African Union, 2005-2010, The African Observatory of Science, Technology and Innovation (AOSTI); <http://aosti.org/index.php/report/finish/5-report/15-assessment-of-scientific-production-in-the-african-union-2005-2010>.

tific output, followed by Nigeria, Tunisia and Algeria). See Figure 2.

Could we on this basis concur with UNESCO's conclusion that "Countries in southern Africa are producing so few scientific publications and patents that the region's social and economic progress is threatened?" (Campbell, 2010, citing UNESCO, 2010) In fact, some studies show that innovation is vibrant on the continent but that it takes, for now, different routes in Africa compared to other regions of the world. Many of these innovations could be classified as 'frugal innovation' solving practical problems and 'customise' innovation which adapts inventions coming from abroad to Africa's needs. It should be noted that the adoption of foreign inventions has always been the channel for every country—even the United States—to acquire technical progress and growth.

Besides, even when considering the western standard, the situation is improving. As noted in the Science, Technology and Innovation Strategy for Africa for 2024 (STISA 2024): "The scientific production of the AU, although small, grew 22 per cent faster than that observed at the world level over the 2005-2010 period" and, "It is noteworthy that 36 of the 54 AU member states increased their level of collaboration in Science and Technology within Africa between 2005 and 2010." The NEPAD agency (The New Partnership for Africa's Development) created by the African Union in 2011, adds: "Africa-based researchers' citation scores exceeds the world average in health sciences (general and internal medicine, tropical medicine, microbiology, virology, health policy and services); in horticulture and forestry; and in chemical engineering, mining and metallurgy."

2—Emerging Signs of a True IP System

2.1—A Mobilisation of the African Continent for Innovation

The African continent is often seen as a mosaic of countries with little coherence. In fact, African countries have set up a number of co-operations that could be, at least on paper, considered as a model.

The first of these institutions is the African Union (AU) which comprises every African state with 54 members. It was established in May 2001 in Addis Ababa and launched on July 2002 in South Africa, with the aim of replacing the Organisation of African Unity (OAU).

This organisation has very wide goals (“achieve greater unity and solidarity between the African countries and Africans”) but also more specifically in our domain, it aims to “advance the development of the continent by promoting research in all fields, in particular, in science and technology.”

In this respect, the AU at its inception created the NEPAD (The New Partnership for Africa’s Development) which takes the form of an agency. NEPAD’s expert group on STI works by promoting STI partnerships and collaborations. It also promotes education and knowledge sharing to strengthen capacity in science and technology.

The African Science, Technology and Innovation Indicators Initiative (ASTII) was launched in 2007 by the NEPAD as a programme area for African Science and Technology (35 countries in 2013) and an African Observatory of Science and Technology Indicators (AOSTI) was created in 2011.

In June 2014, The Africa Innovation Summit, gathering the Heads of State and Government, adopted a 10-year Science, Technology and Innovation Strategy for Africa (STISA-2024). Figure 3.

This strategy fixed the goals to be reached to transform the African situation.

On the funding side, the AU required each of its member states to allocate at least one per cent of GDP to R&D, which represents quite a strong effort for many of the countries. See Table 3.

The strategy also considers “strengthen IP and regulatory systems” a pillar for boosting innovation.

The African Ministerial Conference of November 2015 was dedicated to the topic of “Intellectual Property for an Emerging Africa.” This conference was open by Francis Gurry, WIPO Director General, with these words: “Africa has a great tradition of innovation and creativity... and innovation is a central driver of economic growth, development and better jobs. It is the key for firms to compete successfully in the global marketplace... Intellectual property is an indispensable mechanism for translating knowledge into commercial assets—IP rights create a secure environment for investment in innovation and provide a legal framework for trading in intellectual assets.”

2.2—A Serious IP Infrastructure

Regarding IP, co-operation is also a distinctive feature on the African continent.

Africa has two regional organisations that together promote intellectual property rights.

The African Regional Intellectual Property Organisation (ARIPO) is based in Harare, Zimbabwe. The Organisation Africaine de la Propriété Intellectuelle (OAPI) has its headquarters in Yaoundé, Cameroon.

ARIPO has 19 member countries mostly from English speaking Africa while OAPI has 17 members from French speaking Africa.

Together ARIPO and OAPI cover 36 of the 54 countries in Africa. However, three of the largest African economies are not members: Egypt, Nigeria and South Africa.

Both organisations operate differently. Applications and grants by OAPI automatically have unitary effect in

Figure 3. 10-Year Science, Technology And Innovation Strategy For Africa (STISA-2024)S



Table 3. Illustration For Africa’s Funding Potential

Africa has the potential to finance its STI development programs towards the 1 percent GDP allocation. The 2013 statistics of the five countries with highest STI expenditure illustrate this potential as follows:

- National Budget: Goal 1 percent of the GDP
- Partnership and Cooperation
- Financing research programmes as credible and bankable development projects

| Countries | GDP | 1% GDP |
|----------------------------|--------------------------|-----------------------|
| | (US \$) | |
| Algeria | 209,000,000,000 | 2,090,000,000 |
| Angola | 123,000,000,000 | 1,230,000,000 |
| Egypt | 246,000,000,000 | 2,460,000,000 |
| Nigeria | 520,000,000,000 | 5,200,000,000 |
| South | 335,000,000,000 | 3,350,000,000 |
| Total (5 Countries) | 1,433,000,000,000 | 14,330,000,000 |
| All Africa | 2,309,000,000,000 | 23,090,000,000 |

Source: *Annuaire statistique pour l’Afrique/African Statistical Yearbook—BAD-UA-CEA /AfDB-AU-ECA*

all member states. This is not the case in ARIPO, where member states must ratify and implement the protocols.

A Pan-African Intellectual Property Organization (PAIPO) or a Closer Cooperation with WIPO?

The African Union decided in 2013 to envisage the creation of Pan African Intellectual Property Organization (PAIPO) and a draft of the statute was examined by the Assembly.

PAIPO is designed to complement and supplement the regional organisations (ARIPO and OAPI) with the following objectives:

- Promoting the harmonisation of the intellectual property rights systems of the AU Member States;
- Initiating activities designed to help Member States use their IP systems to effectively fight IP piracy and counterfeits;
- Developing African common positions on IP matters—and in particular developing common positions on IP issues relating to genetic resources, traditional knowledge, geographic indicators, expressions of folklore and the Convention on Biological Diversity; and
- Helping to develop and lead African IP positions in international IP negotiations.

To achieve these objectives, PAIPO would exercise a range of functions. As well as developing guidance and information, PAIPO would also promote bilateral and multilateral IP agreements between AU member states, in order to enhance the “protection and exploitation” of IP rights, and will be empowered to “facilitate” the harmonisation of regional and national AU member state IP legislation. Notably, PAIPO would also have the power to set forth IP standards.

However, this project—whose goals are not very clear given the fact that two regional IP offices already existed—was not cited in the African Ministerial Conference of November 2015 dedicated to “Intellectual Property for an Emerging Africa.” The final declaration of this conference stressed the commitment of the African countries to “Enhance innovative and creative capacities by providing a conducive environment with dynamic IP systems that propel creativity, innovation and inventiveness and effectively guide the promotion, acquisition and commercialization of intellectual property for sustainable growth and development and for the well-being of African populations, and to enhance social recognition of creators.”

It seems that a co-operation with the WIPO has replaced the project of creating a new IP agency. The declaration calls upon the World Intellectual Property Organisation “to enhance its technical assistance aimed at supporting the establishment and implementation of national IP based creativity and innovation

policies, to building and strengthening modern technical infrastructure, for industrial property and copyright and related rights, for national IP offices to be able to provide sustainable high quality, efficient, and cost-effective management, to enhancing programs to facilitate access to patent, scientific and technological information to researchers and innovators in Africa; and to promoting joint initiatives with the African Union Commission, Regional Economic Communities, the African Regional Intellectual Property Organization (ARIPO) and the Organisation Africaine de la Propriété Intellectuelle (OAPI).”

Validation Agreement with the EPO

A new way to integrate the African markets in the invention world economy has been proposed by the European Patent Office with the “validation agreement” which allows the holder of the European patent delivered by the EPO to extend it to a territory not a member of the EPO but bound by a validation agreement.

A first agreement has been signed on December 2010 with Morocco and entry into force in March 2015, and a second agreement has been signed with Tunisia on July 2014 (but not yet in force).

With these agreements the granted European patents will not be re-examined by the national patent offices and will be assimilated as a national patent, which give at the same time a larger scope for European patent and a stronger field for foreign investments in African economies and invention licensing. The low number of resident applicants in African countries, as we have seen, reinforce the interest of this extension mechanism of international patents for these emerging economies.

3—Emerging New Practices

In this nascent IP economy some initiatives seems to constitute landmarks for a more advanced IP economy.

One of the first is the conference held in Nairobi in May 2012 named “Open Innovation Summit.” The main aim of the summit was “to empower African thought-leaders to find ways to spur technological innovation within their own local context.” It was stressed during this conference that after years of lagging in ICT, Africa is now emerging as a recognised innovator in areas such as financial inclusion and mobile app development, demonstrated by the growing number of firms from the continent now competing on the international stage.

“Without open innovation enabling business environments and seamless collaboration, creation of new innovative enterprises and locally relevant solutions becomes incredibly challenging,” says Jussi Hinkkanen, Nokia’s VP of Corporate Relations and Business Environment for the Middle East and Africa. “This event underscores that Nokia and infoDev believe in

the power of partnerships and that Africa is ready for an entrepreneurial revolution.”

Moreover, Some of the More Advanced Initiatives Appear Also in Africa.

The Platform of Technology Exchanges Openix

Openix (<http://openix.theinnovationhub.com/>) is, for example, a platform like ninesygma or innocentive which offers the possibility to address technological challenges or offer technologies for sale or license. See Figure 4.

Similarly **Open AIR** (<http://www.openair.org.za/>) has been created as a partnership involving five leading universities—the University of Ottawa in Canada, the University of Cape Town in South Africa, Strathmore University in Kenya, the Nigerian Institute for Advanced Legal Studies and the American University in Cairo, Egypt. Its primary goal is to uncover new insights to ease tensions between IP and access to knowledge: “We aim to solve a problem at the heart of IP and in-

novation policy: how to reconcile tensions between appropriation and access, excluding and sharing, and competing and collaborating.”

They noted specifically that innovation is abundant and continues to increase in Africa. Examples such as MPesa, Ushahidi, and BRCK provide evidence that successful tech innovations can thrive even in the absence of IP protection. These open IP practices in Africa are, in fact, “assets [...] that African policy-makers and practitioners can bring to national, regional, continental and global IP policy and practical discourse. So how can this be taken into account within IP and knowledge governance models? What happens when global trade pressures lead African countries to adopt and enforce global IP laws? Moreover, what can the world—especially developed economies like the U.S. and Canada—learn from these instances of innovation and entrepreneurship?” See Figure 5.

Compulsory Licensing and Medicine Patent Pool

As underlined by the World Health Organization (WHO) most African countries lack the necessary pharmaceutical manufacturing capacity for effective use of compulsory licensing (<http://www.who.int/bulletin/volumes/92/3/13-128413/en/>). Besides, the existing frameworks for compulsory licensing in several African countries are not fully compliant with the TRIPS Agreement as shown in Table 4.

WHO concluded that, “There is therefore an urgent need for Africa to begin developing a strong pharmaceutical manufacturing capacity. Among sub-Saharan countries, only South Africa has a limited primary manufacturing. The benefits Africa stands to gain from developing strong manufacturing capacity in the pharmaceutical sector are immense: of the 54 fully recognized sovereign states in Africa, 33 are ranked as least developed countries by the United Nations and are therefore eligible to refuse to grant patents for pharmaceuticals until July 2021. Thus, building a strong manufacturing capacity on the continent at this stage not only will facilitate the production of generic drugs in the continent but also will make the effective use of compulsory licenses much easier and attractive.”

To solve the problem of access to treatments composed of multiple pharmaceutical products (like HIV, viral hepatitis C and tuberculosis, which are prevalent in Africa and other developing countries, *The Medicines Patent Pool* (MPP) (<http://www.medicinespatent-pool.org>) has been founded and funded by UNITAID to offer a new solution. Through its innovative business model, the MPP partners with governments, industry, civil society, international organisations, patient groups and other stakeholders to forecast, prioritise and license needed medicines. The organisation encourages generic manufacture and the development of

Figure 4. Openix Website



Figure 5. OpenAir Website



new formulations through patent pooling that seek to address demands for treatment across Africa and other developing countries.

The pool signs license contracts with pharmaceutical industries, and thus helps to speed up the availability of lower priced, newer medicines because there will be no need to wait out the patent term. In exchange for the payment of royalties to the patent owners, any producer can manufacture the patented medicines and sell them in countries well before the expiration of the patent term.

To date, the MPP is currently managing more than 50 HIV pharmaceutical development projects with manufacturers to help speed availability of quality-assured generic versions of new ARVs, including new fixed-dose combinations.

A Look to the Future

The OpenAir organisation has sponsored a reflection on the possible future of the knowledge economy and innovation in Africa.

The three scenarios which could be present are: (1) globalization; (2) continuation of the current informal situation, and (3) invent of an original model based on traditional knowledge. None of these provide a magical solution but they stress the fact that Africa is now at the beginning of a new era in the domain of innovation and IP and that the coming years will probably see some big changes. ■

Available at Social Science Research Network (SSRN) <http://ssrn.com/abstract=2822360>



OpenAir Book

Table 4. African Countries Not Fully Compliant With The TRIPS Agreement

| Legislation, country | Degree of compliance |
|---|--|
| Patent Act 2003 (Act 657), Ghana | Gives supremacy to international treaties over domestic laws when there is conflict between them (fully compliant with the TRIPS Agreement) |
| Industrial Property Act 2001 (section 80), Kenya | Allows compulsory licences to be granted without meeting the prior negotiation requirement or paying remuneration to the patent holder (inconsistent with TRIPS Agreement Article 31) |
| Patents and Designs Act 1990 (paragraph 15, schedule 1), Nigeria | Same as that of the Kenyan legislation |
| Law No. 31/2009 of 26/10/2009 on the Protection of Intellectual Property 2009, Rwanda | Same as that of the Ghanaian legislation |
| Medicines and Related Substances Amendment Act 2002 (section 15C[a]), South Africa | Provides that patent rights on a medicine may not extend to any medicine that has been put onto the market by the owner or with the owner's consent; obviates the need for a compulsory license in respect of any medicine that has been put on the market anywhere in the world by the owner or with their consent (inconsistent with TRIPS Agreement Articles 28 and 31) |

<http://www.who.int/bulletin/volumes/92/3/BLT-13-128413-table-T2.html>

Table 5. The Three Scenarios

| Wireless Engagement | Informal—The New Normal | Sincerely Africa |
|---|---|--|
| Countries in Africa have strong international roles, and African enterprise is interconnected with the global service-oriented economy. Savvy, young, educated and mobile business leaders are forming a new and vocal middle class. Engaged citizens are able to participate both politically and economically, so holding their governments a countable. Uneducated or under-resourced individuals are excluded by their inability to conform to homogeneous technical, legal and socio-economic standards. | Dynamic informalities cross every aspect of African societies—economically, politically and socially. Increasingly diverse regions of the continent are constantly changing, impacting and impacted by the endless ways in which people pursue their livelihoods. Ideas constantly recombine within communities built upon interpersonal trust, triggering innovations adapted to this relentless change. Who you know matters more than what you know. Those people unable to establish local grassroots relationships will fail to build thriving businesses or social influence. | Global instabilities and external pressures allow Africans to focus inward, building strength by exploiting for themselves valuable endowments including a youthful population and natural resource riches. With scarcity threatening the rest of the world, African societies ensure sustainability by reengaging and reinterpreting their traditional knowledge systems and socio-cultural institutions. Who you are matters most. Outsiders lacking community roots lose the ability to participate socially, politically and economically. |