



openAIR
AFRICAN INNOVATION RESEARCH

Annual Report 2018

Insights on scaling African innovation



Photographs in this report are supplied by Open AIR network members and affiliates. Images capture the diverse settings in which Open AIR research fieldwork and related activities have taken place during the past year.

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We aim to solve a scalability problem at the heart of intellectual property and innovation policy: to reconcile tensions between appropriation and access, excluding and sharing, and competing and collaborating.

About Open AIR

Open AIR is a unique collaborative network of researchers spread across 15 African countries, Canada, and elsewhere in the world, answering two overarching questions:

- How can open collaborative innovation help businesses scale up and seize the new opportunities of a global knowledge economy?
- Which knowledge governance policies will best ensure that the social and economic benefits of innovation are shared inclusively?

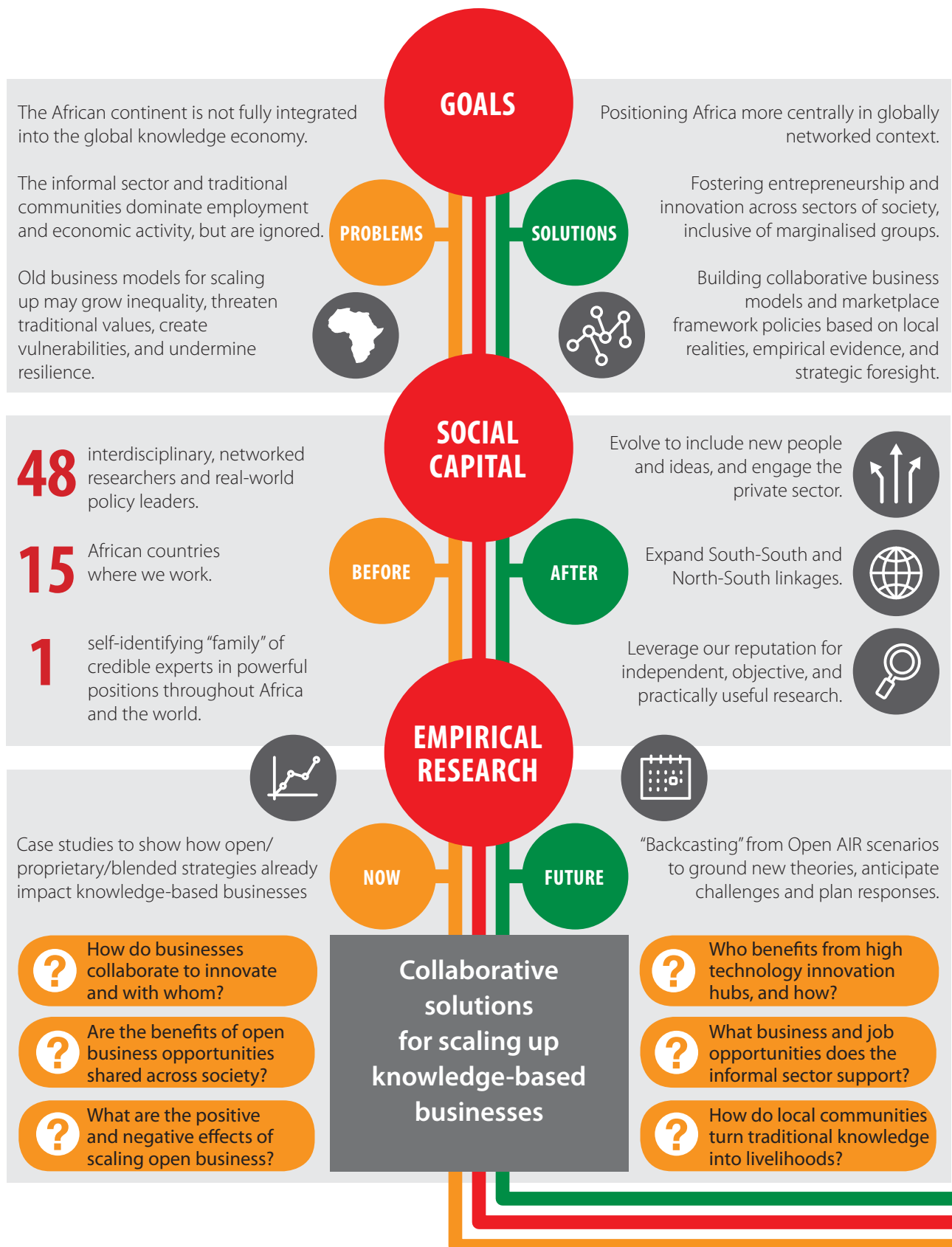
Open AIR's primary goal is to uncover new insights about the balance between control over and access to knowledge. Specifically, we aim to solve a scalability problem at the heart of intellectual property (IP) and innovation policy: to reconcile tensions between appropriation and access, excluding and sharing, and competing and collaborating. In dealing with this problem, our research is showing how knowledge-based businesses can bypass outmoded, constrictive knowledge governance practices to capitalise on open collaborative innovation strategies.

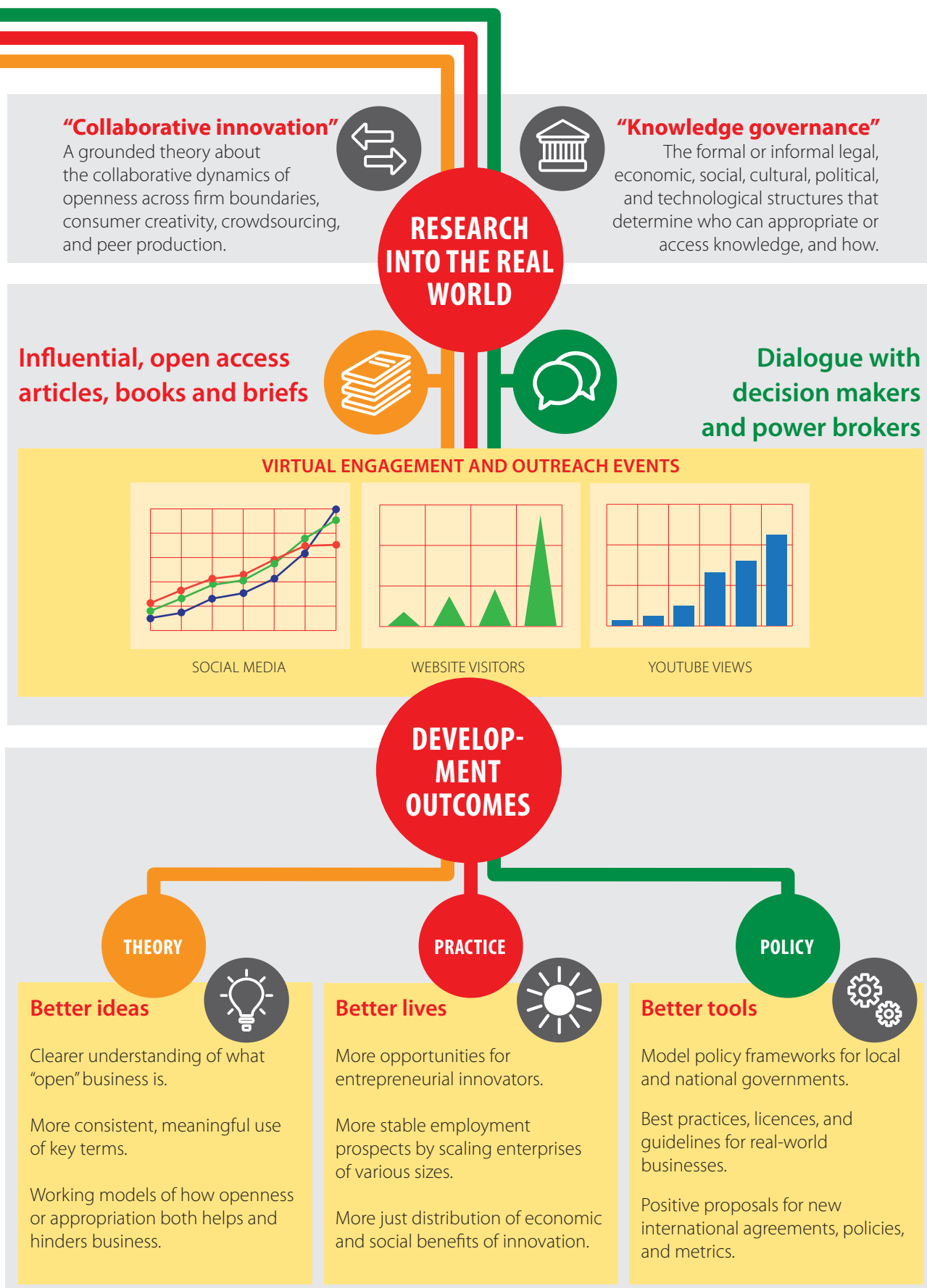
Open AIR aims to improve our understanding of the ways in which knowledge-based businesses can scale up to take advantage of global opportunities, while simultaneously ensuring that the benefits of innovation are shared inclusively throughout society as a whole. Open AIR's African-centred research calls attention to the importance and sensitivity of context in the making of intellectual property (IP) and knowledge governance policy for sustainable development. Through improved intellectual property (IP) policies and practices, this research will lead to more innovation that benefits more people in both developing and developed countries.

In parallel, Open AIR is bringing insights and perspectives to the rest of the world, learning from what is happening and what works in Africa. There is significant debate in academia and among policymakers as to whether IP policies in the developed world are helping or hindering innovation. The continent of Africa is widely acknowledged to be at the forefront of global economic growth and shifting geopolitical power structures. The world will be able to learn from African innovation that is happening often in the absence of strict IP enforcement in people's day-to-day lives.

To encourage such learning from Africa, Open AIR, in partnership with leading experts, institutions and funding organisations from Canada, is building sustainable, cross-regional relationships. To prepare for plausible futures in which knowledge-based innovation becomes increasingly prominent in Africa, Open AIR is connecting new and emerging researchers in African countries with their counterparts in places such as Canada, so that Africans conducting groundbreaking research on their continent will play a more prominent role in global knowledge production. Through mutually beneficial research partnerships, Open AIR is recognising Africa's role in the global knowledge economy.

Theory of change







The research problem

The Open AIR network's previous research showed that innovation is happening in Africa in ways that were previously overlooked. We are now investigating whether that innovation is scalable, and if so, how. We previously showed that the role of intellectual property (IP) is more nuanced than often portrayed. It can sometimes facilitate or frustrate innovation, or even both. Currently, we are expanding on that analysis by focusing on the scalability of open and collaborative business models, and their impacts on development.

Our previous activities also created a new and unique interdisciplinary community of established and emerging African researchers. Joint activities significantly increased research quality and capacity, adding a credible, independent, and distinctly African voice to global knowledge policy debates.

We are now leveraging this social capital to further our policy and practical influence, and to position our African leaders more centrally in global networks via cross-regional partnerships with Canada as well as with countries in the Global South.

Learning how to scale up knowledge-based businesses without jeopardising sustainability or sacrificing core values.

Our previous research identified three areas that are local priorities, especially for marginalised communities, and reflect plausible scenarios for the future of knowledge and innovation. The research we are now conducting aims to dig more deeply into particular dimensions of these scenarios specifically regarding scalable open and collaborative business models.

Based on many African nations' recent records of strong economic growth and shifting demographic trends, businesses on the continent are beginning to emerge as important players in the global knowledge economy. Yet, if Africa's tremendous potential for global economic and trade opportunities is to be realised, many issues must be overcome. One of these issues – the focus of Open AIR's current research – is learning how to scale up knowledge-based businesses without jeopardising sustainability or sacrificing core values. Our hypothesis is that business models grounded in networked, open, and collaborative innovation can help make that happen. Parallel to empirical research in African countries, we conduct comparable research in the Global North. Cross-regional comparative research will reveal commonalities and contrasts that can be used to improve governance of the global knowledge economy for the benefit of people living in developed and developing countries alike.



Moreover, Open AIR's research intersects with research on "open development" being carried out by other networks and projects, such as research on open data, open science, open education, and user rights. These intersections are intentional. Our research is distinct from, but complementary to, those other initiatives, because of our focus on collaborative, entrepreneurial business models – and the economic and social ramifications of such models – made possible by open knowledge governance systems. Our research can, therefore, help to highlight interconnections among the various conceptions of openness.

Research clusters

Open AIR has four thematic clusters, based on our previous research on knowledge and innovation in Africa: **High Technology Hubs**, **Informal Innovation**, **Indigenous Entrepreneurship**, and **Metrics, Laws, and Policies**.



High Technology Hubs

Open AIR's past work developed a strong appreciation of the prevalence and importance of high tech hubs throughout the African continent. IP policies, which underpin developed countries' laws, function on the assumption that formal protections are the best way to encourage innovation. A rapid proliferation of IP rights, however, can result in thickets of vague and overlapping claims, which we see in places like the United States, causing serious questions regarding current IP laws and policies.

Stepping back from the developed world, in most of Africa there is an explosion of high tech innovation which is occurring in what is essentially an IP vacuum. Over the past five years, incubators, accelerators, makerspaces, and tech hubs have proliferated throughout Africa, in university, private venture, and government initiative settings. To ease the paradox between the openness that facilitates new ideas and the collaborations that characterise these tech hubs, with the pressure for proprietary protection of new ideas and knowledge, Open AIR is analysing the extent to which formal IP rights are important to the success or failure of Africa's burgeoning tech initiatives at and around high technology hubs.

Metrics, Laws, and Policies

Informal Innovation

The majority of businesses in Africa are informal and there is growing interest to understand the creative processes and innovations occurring in the informal sector. Africa's myriad informal micro enterprises offer diverse and vibrant settings for analysing entrepreneurial development and innovation. These enterprises are often confronted with severe scarcity conditions, which drives them to improvise solutions to everyday challenges, sometimes resulting in innovations that better address local needs. Our research seeks to appreciate how the informal and formal sectors interact in different contexts, and how IP rights might allow for better policy frameworks to encourage economic growth.

A good example of such interactions between informal and formal innovation is happening in makerspaces, where communities are focused on problem-solving, sharing knowledge, and facilitating access to technologies through the democratisation of manufacturing tools. The maker movement espouses the do-it-yourself ethos and other values of Africa's informal sector innovators; both operating at a small-scale but with great up-scaling potential.

Indigenous Entrepreneurs

Based on previous research by Open AIR, it is clear that traditional knowledge held by local communities is becoming a source of inspiration and innovation for many entrepreneurs. Such knowledge is becoming the basis for building niche businesses and creating economic opportunities. These innovations increasingly take into account modern technologies, especially information and communication technologies. Technologies are crucial in scaling up indigenous and local entrepreneurial activities and, consequently, the economic empowerment of stakeholders.

The relationship between traditional knowledge, IP, and innovation has been a focal point of Open AIR's research. Open AIR's new research focuses on how knowledge is used in the economic interests of indigenous communities, and how such knowledge has been deployed outside these communities in connection with establishing entrepreneurial businesses. For example, Nigeria's movie industry combined traditional cultural narratives with digital video technology and other aspects of information and communications technologies (ICT), to innovate around cultural creativity and entertainment for the local and global audience.

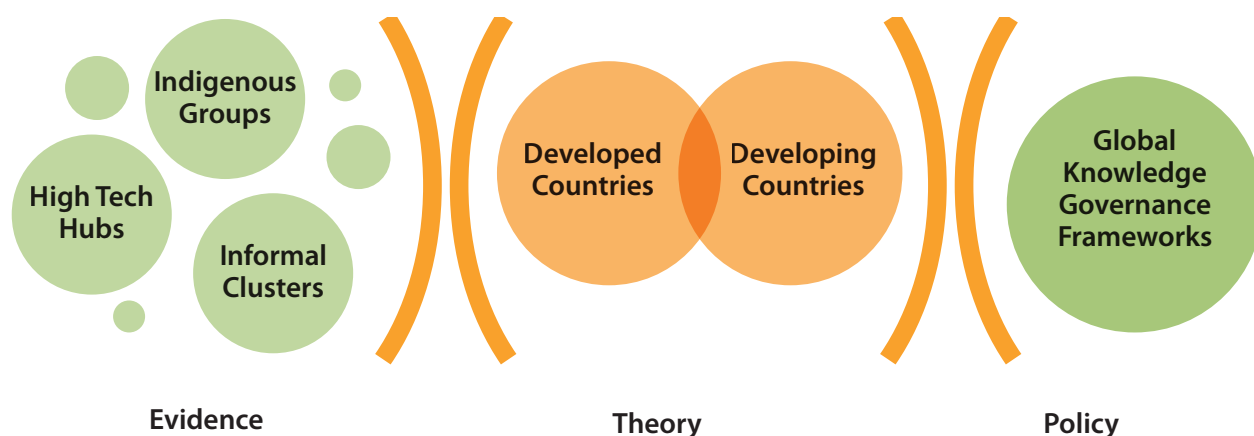
The theme of metrics, laws, and policies is a cross-cutting, overarching theme that aims to develop a sharper lens to better capture the reality of innovation in Africa. Open AIR has previously shown that developing countries rank poorly in measures of innovation, not because they are not innovative, but because the proxies being measured do not reflect the realities of innovation in developing country contexts. As stated in the report by the Stiglitz Commission on the Measurement of Economic Performance and Social Progress, "what we measure affects what we do; and if our measurements are flawed, decisions may be distorted."

Our research moves forward towards devising a new grounded theory and associated measures of innovation on the African continent. Our work is intended to provide a concrete framework that can be used in specific situational analyses of on-the-ground practices of African innovators. We are identifying measurement tools that build upon Open AIR's new grounded theories about knowledge and innovation, which will be useful for anyone conducting research on innovation in Africa or even globally. Specifically, our objectives are: (a) better science and innovation policies; (b) better development planning; and (c) better and more accurate positioning of Africa on the global innovation map.

Questions and methods

Across these clusters we are investigating several sub-questions. Open AIR's response to the problems and questions described above is to **seek solutions based on robust, empirical, grounded research**. In pursuit of ensuring that our research has an impact, the methods are split into three phases: (1) empirical evidence; (2) grounded theory building; and (3) designing and promoting coherent global knowledge governance frameworks, exerting policy and practical influence through scenario-driven strategies, and feedback to our case study subjects.





Interconnected, empirical case studies

To implement the first step in our research, we adopted the method of “situational analysis” through **20 different case studies** throughout the African continent. We addressed our research questions at the situational level, that is, where the units of analysis are not micro or macro, but are instead at the intersection of actors and forces that shape innovation situations. This approach enabled our researchers to engage with mixed methods, within the various sub-studies, for example, literature reviews, internet-based data mining, social network analysis, key informant interviews, and surveys.

Grounded theory building

The method of grounded theory building allowed us to conduct our research by beginning real-world empirical evidence before solidifying a theoretical framework. That meant we were developing new conceptual models based on our network’s on-the-ground research observations, rather than entrenching assumptions based on questionable theories. At the same time, we realised that some preliminary theory building, consolidating and refining terminology and taxonomies, was helpful in order to conduct our case studies.

Policy design and testing

We are using our new empirical evidence and theoretical frameworks to inform the development and design of recommendations to different countries’ policymakers and influential stakeholders. Where applicable, we are suggesting policy changes to facilitate improved marketplace frameworks and new practical tools for businesses to successfully scale up their innovations, thereby helping to further stimulate innovation. To ensure the largest impact, we have been combining our empirical and theoretical methods with “action research”, thus ensuring Open AIR’s research beneficiaries are directly involved in the execution of our partnership.

Results and outcomes

Research findings

The research process

In 2015 Open AIR issued an open call for case studies that would address our core research questions. Proposals were received both from researchers already known to the network and from new researchers in new countries. These proposals were reviewed by the Steering Committee with respect to their overall quality, the qualifications of the applicant(s), relevance to Open AIR's research questions, geographical spread, and thematic coverage. Successful applicants were informed in February 2016, with a total of 20 case study proposals being selected for funding. The ratio of men to women for our case study research is 1:1. These case studies all touch upon various aspects of our thematic research areas and are spread across the continent.

In March 2016, all the successful case study researchers were invited to a three day workshop hosted by our East African hub (Centre for Intellectual Property and Information Technology Law (CIPIT), Strathmore University, Nairobi, Kenya) in order to review, brainstorm, and refine their upcoming research projects. Empirical research then commenced in the second half of 2016 and continued into 2017. Only one of the 20 lead researchers had to withdraw his study. A full list of Open AIR's new case studies can be found in Table 1.

TABLE 1: OPEN AIR CASE STUDIES

SHORT TITLE	THEMES	PROJECT LEADS
Entanglement as a Strategy to Scale Digital Tech Hubs	High Technology Hubs	Abrahams
Open versus Proprietary Models: A study on the Use of Software in Local Tech Hubs in Nigeria	High Technology Hubs	Adewopo, Chuma-Okoro
Modeling the Dissemination of Local STEM Innovation in Ghana: Can Teachers be Grassroots Innovators and Entrepreneurs?	Informal Sector Innovation	Adomdza, Beem
Skills Development, Knowledge and Innovation at Suame Magazine, Kumasi	Informal Sector Innovation	Adu-Gyamfi, Adjei
MSMEs and Open Collaborative Innovation in Botswana	Informal Sector Innovation	Ama
The Maker Movement in Gauteng Province, South Africa		Armstrong, Kraemer-Mbula
The role of collaborative innovation in scaling-up knowledge based businesses in Ethiopia: The case of software and hardware startups in Ethiopia	High Technology Hubs	Baraki
Determinants of Innovation in Ethiopian Informal-Sector Micro and Small Enterprises (MSEs)	Informal Sector Innovation	Belete
ICTs in Agricultural Production and Potential Deployment in Operationalising Geographical Indications in Uganda	Indigenous Entrepreneurs	Dagne, Oguamanam
The Maker Movement Across North Africa	Informal Sector Innovation	El Houssamy, Rizk
Power Relations in Egypt's Tech Hubs	High Technology Hubs	El Houssamy, Weheba, Rizk
Open Collaborative Models of Mobile Tech Innovation in Kenya	High Technology Hubs	Rutenberg, Mwangi, Nzomo
Determinants of Innovation Capability in Informal Settings: The Case of Nigeria's Clustered ICT Microenterprises	Informal Sector Innovation	Jegade
Enhancing STEM Education through Public Private Partnership in Tanzania	High Technology Hubs	Laltaika
Innovation and Entrepreneurship for Gender Empowerment: A case study of Indigenous Maasai Women of Arusha, Tanzania	Indigenous Entrepreneurs	Laltaika
Flexible Intellectual Property for Agricultural Innovation in Kenya	Indigenous Entrepreneurs	Munyi
Techno-collaboration by Nollywood Entrepreneurship	Indigenous Entrepreneurs, Informal Sector Innovation	Oguamanam
Open Innovation for Indigenous Entrepreneurship in Arts & Crafts	Indigenous Entrepreneurs	Ouma
3D Printing: Enabler of Social Entrepreneurship in Africa?	High Technology Hubs	Schonwetter, Van Wiele
Indigenous Entrepreneurship Beyond Benefit-Sharing	Indigenous Entrepreneurs	Traynor, Rutert

Open AIR understands that the unique subject matter of individual case studies requires varying methodologies. We have therefore used a wide range of methods to cater to the needs of each study. Some studies make use of qualitative research, in which in-depth discussions with key informants are utilised to obtain appropriate data. Some take their interviews to the next step by using Participatory Action Research, in which group meetings are held with the study's interviewees, enabling participants to be a part of the discussion required in answering the study's research question(s). Other studies deploy surveys or questionnaires. In tandem with each of these methods, many studies use general desktop research to create comprehensive literature reviews, or lay the groundwork to find gaps in an area of study, and see where or how Open AIR research can address such gaps. Many of our studies effectively use multiple methods for optimal results and useful recommendations.

For example, one case study, looking at 3D printing as an enabler for social entrepreneurship in East and Southern Africa, had the researchers

use both desk research and Participatory Action Research to ensure that the participants were fully engaged in the research and had a voice in the study's output. In fact, a community of makerspaces – where much of this 3D printing takes place – has been created, an outcome of the South Africa Maker Movement Workshop held in March 2017, hosted by our Pretoria hub, Institute for Economic Research on Innovation (IERI), and supported by Open AIR. At this workshop, South African makers met and shared their challenges, achievements, and plans for the future. For more on this workshop and our Participatory Action Research involving makers, see the Box entitled, “Open AIR’s workshop with makers lights a spark” on page 35.



Pioneering research ethics protocols

Multi-jurisdictional research is complex and not all jurisdictions have ethical approvals processes or Research Ethics Boards (REBs) for social sciences research involving human subjects. Nevertheless, it is critical to Open AIR that adequate ethical approvals be obtained for all research involving human subjects to safeguard equitable and socially-just research processes. As such, various solutions have been found that are contextually relevant and respectful of the partnerships we have with our researchers and their institutions.

One approach has been to offer our researchers from across Africa the utilisation of the University of Cape Town’s (UCT) established system for ethical clearance, or to assess local systems for ethical clearance in light of UCT’s standards. Another approach has been our pioneering a reciprocal ethics approval agreement between the University of Cape Town (UCT), the American University in Cairo (AUC), and the University of Ottawa (uOttawa). This agreement ensures that ethical clearance in any one of these institutions will be recognised by the other two. This agreement not only applies to Open AIR researchers, however, but all other social science research projects at these institutions, further building sustainable institutional relationships between these institutions. Thanks to this agreement, where research involving human subjects is being conducted and no local boards or committees exist for ethical approval, researchers are able to apply to their nearest institution (UCT, AUC, or uOttawa) for approval, with a copy being submitted to each of the other institutions. Notably, some of the other institutions affiliated with our researchers have adopted ethics templates from our institutions for guideline documents as they develop their own procedures.

Data collection and report drafting is now complete on all of our case studies. The lead researchers who form Open AIR’s Steering Committee are now analysing and synthesising results from across these studies. At the same time – following double internal peer reviews of every study – our publications team is busy transforming the research reports into public working papers to mobilise insights into practice. Our next step is to produce versions of this research for different audiences, including briefing notes for innovation policymakers, guidelines for innovation practitioners, and refereed articles for innovation scholars.

Insights on scaling African innovation

By conducting 20 empirical case studies and producing 12 concept papers over the past three years, Open AIR has been able to shed new light on its overarching research questions:

- *How can open collaborative innovation help businesses scale up and seize the new opportunities of a global knowledge economy?*
- *Which knowledge governance policies will best ensure that the social and economic benefits of innovation are shared inclusively?*

We learned from our initial research that our first question is difficult to answer without a better understanding of what it means to scale up. While words like “scalable” are deployed as the end-game of innovation by policymakers, non-governmental organisations, venture capitalists, and others, there is poor understanding of what scalability means in practice for development. This knowledge gap is hampering researchers’ and policymakers’ ability to solve the problems underlying Open AIR’s other research questions.

There are clear parallels between the current rhetoric of “scalability” and the earlier (and ongoing) discourse around “openness” over the past decade. Just as Open AIR contributed early to research on “open” innovation and “open” development, we believe we are ahead of the curve in adding conceptual clarity and empirical rigour to the emerging challenges of “scaling”.

Open AIR’s original sub-questions (about management strategies for collaborative business models and dealing with IP, and intermediaries and policies to facilitate the flow of knowledge), produced this set of Initial findings:

INITIAL RESEARCH FINDINGS

Conceptually, there are different ways to understand scale, such as scaling up/out or scaling organisations/activities/impacts.

Scaling is not typically an explicit aspect of innovation or IP policies in African countries, but is an implicit expectation among innovators.

Researchers and policymakers lack the appropriate metrics to evaluate the impacts of scaling innovation in the African context.

Even when scalability can be measured empirically, on a normative basis it is locally contestable (and contested) as an appropriate and sustainable development goal.

The side effects of scaling up are largely unknown or untested empirically, for example, in respect of gender equality and empowerment of women and girls.

REFINED SUB-QUESTIONS

? *What are the most appropriate ways to approach the concept of scaling in Africa?*

? *How can scaling be integrated into innovation and IP policies?*

? *Which metrics, indicators, and indices best reflect the scalability of African innovation?*

? *What are the normative tensions around scalability and sustainability of innovation?*

? *How can scaling be done inclusively, in particular to empower women and girls?*

FOCUS FOR FURTHER RESEARCH

Answers to these refined sub-questions will be combined with answers to Open AIR’s original sub-questions, in order to address the central research problem of balancing control over and access to knowledge in innovation systems, and fully achieving its research goal(s) for the seven-year partnership.

Seven vignettes from Open AIR's 20 case studies

The Nollywood phenomenon: Innovation, openness and technological opportunism in the modelling of successful African entrepreneurship

Chidi Oguamanam



Chidi Oguamanam in discussion with two of the most pre-eminent Nollywood actors – Joke Silva (left) and Olu Jacobs (centre).

The Nigerian movie industry, known as Nollywood, has attracted an impressive degree of research interest since its debut in the 1990s, resulting in a dedicated transdisciplinary research niche called Nollywood studies. Nollywood is situated as disruptive of historic and contemporary African movie culture, underscoring Nollywood's significance as a phenomenon "fundamental to Africa's self-preservation".

In this study, we examine Nollywood in relation to its collaborative model of innovation, its unique form of openness, and other factors implicated in its creative diffusion as a phenomenon across Africa and its diaspora. We also explore Nollywood's emergence as an unexpected creative force in the world of entertainment. The study evaluates the evolutionary interface between technology and

entrepreneurship as a dynamic process in the progress and transformation of Nollywood. Complementing the issue of technology, as a factor in Nollywood's evolution, the study identifies a complex aggregation of other factors, including culture, ethnicity, marketing and entrepreneurial ingenuity, liberal art infrastructure, and Nigeria's abundant social capital, and how they have coalesced to put entertainment alongside oil and agriculture as one of the highest employers of labour and as a surprising dispenser of economic oxygen in Africa's most populous country and its largest economy.

Our starting premise is that Nollywood owes its evolution to technological innovation and many unexplored contextual contingencies. The study also identifies and examines forms of openness in Nollywood, within and outside of existing paradigms, and how they factor into the industry's success. Nollywood operates in a fluid borderline between formal and informal frameworks where a pragmatic and evolving approach to the intellectual property system and openness reflects aspect of its unique business model with contextual sensitivity and, in a way, advances its transnationalisation, albeit counter-intuitively. Nollywood represents a grassroots indigenous entrepreneurial cultural initiative.

Our project provides insights on the scalability potential of the Nollywood phenomenon and its cross-sectoral ramifications for innovation and entrepreneurship on the African continent. The study applies a combination of methodological strategies aimed at eliciting, reifying, and drawing substantively from industry practitioners' voices and perspectives, as demonstrated through such stakeholders' mastery and institutional history and knowledge of Nollywood's evolution and its modus operandi.

The maker movement across North Africa

Nagla Rizk

To understand the challenges and opportunities of digital entrepreneurship:

- Makerspaces in developing countries have the opportunity to benefit from Open Source Appropriate Technology (OSAT), which allows for imported technologies to be adapted and altered to meet local developmental needs.
- Makerspaces are usually equipped with digital fabrication tools that allow innovation in a manner that allows anyone to make (almost) anything.
- In addition to providing easy and cheap access to digital fabrication tools, many makerspaces provide opportunities for learning, such as workshops or tutorials, in order to teach new makers about the fundamentals of digital fabrication and digital manufacturing. These opportunities enable those who have an idea for innovation, and who might not have the technical know-how, to make their ideas into a tangible product. Therefore, makerspaces provide a unique type of entrepreneurial opportunity associated with the digital age.
- Makerspaces transform collective knowledge and learning processes that occur within makerspaces into physical or digital products.

To scale up collaborative and open innovations that lead to positive social and economic impacts:

- The core aspiration of the maker movement is to use the collaborative environment that organically exists within makerspaces to educate, innovate, and invent. Makerspaces provide an open collaborative space that is inviting to entrepreneurs, even for those who “make” without having an entrepreneurial mindset from the beginning.
- Makers work and learn within groups, in a collaborative environment, gaining skills through trainings and workshops, some of which become useful for makers to find employment as well. However, some makers seemed wary of collaboration due to fear of being copied. Other makers seemed happy to work using open source models, and seemed to view collaboration as a positive learning and skill-building experience.
- Scalability is an opportunity for entrepreneurs wishing to grow their businesses or to enter the market. On the

flip side, this opportunity comes with associated risks, such as balancing the scaling of the business with its sustainability. For example, FabLab Egypt's Director, Omar El Safty, told us that scaling is an opportunity for growth, and it is a desirable outcome from a business point of view. However, many makers delve into projects too quickly without conducting the needed feasibility studies for scaling their innovations. This results in a growth rate that is not supported by the maker's capabilities and is potentially threatening to the entire project.

- In terms of scaling up makerspaces themselves, the maker culture in Egypt, Morocco, and Tunisia is still spreading, and thus makerspaces are still learning about activities that can support scaling up. FabLab Egypt ensures that scaling includes a sustainable knowledge sharing process through education, sharing, and collaboration.

To translate knowledge into new policies and more effective practices for businesses:

- Makerspaces should not be viewed as autonomous solutions to the unemployment dilemma of North African countries, but they should be capitalised on as local solutions to the many socio-economic and political challenges currently being faced in these countries. Our research shows that makerspaces across North Africa aim to address local problems in innovative ways at low costs.
- Local policies should reflect this unique opportunity. The two main areas where there is room for improvement with regards to policies that affect makerspaces are funding and registration. Lack or inadequacy of funding was cited by most makerspaces interviewed as a major challenge they faced. The other main challenge faced is registration, as countries in North Africa do not have a clear-cut stand on how makerspaces should register in order to operate legally.
- Makerspaces result in opportunities for user innovation that yields employment opportunities. Therefore, countries in North Africa should support and nurture these spaces as an investment for their youth populations.

Open collaborative models of mobile technology innovation in Kenya

Isaac Rutenberg

This study investigated the dynamics within the emerging mobile technology (tech) start-up ecosystem in Nairobi, Kenya so as to:

- Determine the nature of collaborative innovation, skills development, and knowledge governance amongst mobile technology businesses located in or around tech hubs
- Understand the extent to which the above factors related to innovation, skills, and knowledge, play a role in determining the successes or failures of these tech start-ups.

This research was premised on the fact that mobile tech start-ups are vital in spurring innovation within and around tech hubs in Africa. Through surveys and in-depth interviews conducted with participants in 25 mobile tech start-ups (primarily engaged in web and application development) within Nairobi, this study presents the following findings regarding these start-ups' approaches to collaboration, innovation, knowledge governance, and skills development.

RESULTS	CONCLUSIONS
<ul style="list-style-type: none">● Tech hubs in Kenya are characterised by collaborative working environments, such as co-working space.● This translates in start-ups' business development process, networking, and finding, as well as in their knowledge appropriation and sharing.	<ul style="list-style-type: none">● Openness is at the heart of the mobile tech ecosystem in Kenya.● Open collaboration enables start-ups to network, access funding opportunities, and further develop the skills of their staff.● The sharing of resources in this manner within and around tech hubs enables start-ups to optimise their business models while protecting their specific products and services.
<ul style="list-style-type: none">● Tech hubs are the primary source of start-ups' knowledge and business networks.● Partnerships between start-ups, which are facilitated through these hubs, are key to their survival. They drive investment in start-ups as well as knowledge sharing amongst start-ups.	<ul style="list-style-type: none">● Partnerships brokered through tech hubs' networks are the main driving force behind collaboration between technology entrepreneurs and of the industry as a whole in Kenya.
<ul style="list-style-type: none">● The operation of start-ups and innovation within tech hubs forms part of the informal sector in Kenya.● A vast majority of start-ups in the study supplement their team members' formal education with practical, on-the-job skills training, which is often informal.● While some aspects of start-ups' businesses are formalised through company registration and written contracts with clients and consultants, there is limited use of the intellectual property system by start-ups.	<ul style="list-style-type: none">● The informality of the start-ups can be credited to the arrival of the mobile phonebased financing service, MPESA, which has brought about an upsurge of mobile tech innovations, whose products and services are often oriented around MPESA.● This innovation is driven largely by self-employed or part-time/freelance developers located within or around tech hubs.

Information technologies in agricultural production and their potential for deployment in operationalising geographical indications in Uganda

Tesh Dagne and Chidi Oguamanam

Objective of the case study

The case study aimed at understanding how information technology law and policy can be devised to facilitate collaborative production of agricultural specialities to capture premium value in niche global markets. In pursuit of this objective, the case study examined existing information technology initiatives in Uganda and analysed their role in creating and enhancing a collaborative environment in the production and marketing of agricultural products.

Findings and conclusions

- Agricultural producers in Uganda utilise information technology initiatives, such as the Community Knowledge Worker Program, Busoga Rural Open Source and Development Initiative, and the Women of Uganda Network, to facilitate collaborative agricultural knowledge exchange and sharing at the global, national, and local levels.
- The majority of information technology initiatives that are deployed to support agricultural production in Uganda are community driven, devised by non-profits and realised through participation of community members working collectively.
- In the course of conducting the study, linkages have been established between various players in the agricultural value chain of speciality products, such as Vanilla, and information technology project leaders, and policymakers, with an attempt to create awareness of how information technologies can be deployed to enhance agricultural production through facilitation and network creation among local and rural communities.
- Despite an understanding of the role of information technologies in agricultural production at the governmental level, existing initiatives lack national policy guidance and supporting legislative framework.
- Through proper policy guidance and supportive legislative intervention, the information technology initiatives covered in the case study constitute scalable networks that help close critical information gaps faced by smallholder farmers in agricultural extension and marketing information.
- It is recommended that for effective deployment of information technologies for agricultural production of speciality products, a legal framework for a system of geographical indications can be used as a means of facilitating collaborative and knowledge-based agricultural production, by enhancing interaction between different actors across the value chain for these products.



3D Printing: Enabler of social entrepreneurship in Africa?

Tobias Schonwetter and Bram van Wiele

This case study is one of several makerspace- and FabLab-related studies from all corners of Africa, carried out by Open AIR. This case study investigates open and collaborative dynamics within the context of 3D printing technology, as provided by FabLabs and used by social entrepreneurs in Kenya and South Africa.

The case study starts off by acknowledging the potential of 3D printing to revolutionise and democratise manufacturing processes in Africa and enable the local production of much-needed products. The premise of the study is that affordable access to 3D printing technology is one of the main stumbling blocks for unlocking the technology's full potential in the African context. The study looks at two promising strategies to facilitate affordable access to 3D printing technology: (i) the use of shared 3D printers in FabLabs; and (ii) the manufacture and supply of 3D printers that cost less than USD 500. The key questions the case study seeks to answer are:

- Do these two strategies enable social entrepreneurs in Africa to make use of 3D printing technology and develop viable business models and scale their businesses?
- What role does collaborative problem-solving, follow-on innovation, and knowledge sharing and appropriation play in this context?

To answer these questions, the case study researchers engaged in desk research and empirical research in the form of interviews with FabLab founders and administrators in South Africa and Kenya, as well as with representatives from four social enterprises that produce or make use of low-cost 3D printing technology. For instance, one social entrepreneur interviewed for this study creates shoes through 3D printing for people with deformed feet from sand flea infestations. Another social entrepreneur interviewed prints most parts for headlamps, assembles them, and then sells these lamps at a very low price to local fishermen so that they can start fishing before the sun rises or continue fishing after the sun has set, to increase their income. Yet another example is the local printing of much-needed medical equipment.

The case study's main contributions and findings can be summarised as follows:

- The case study maps and develops a typology for FabLabs in South Africa and Kenya.
- It also finds that several dimensions of collaboration, knowledge sharing, and openness can be found within the FabLab ecosystem. For instance, peer-to-peer

learning among FabLab users plays a crucial role in knowledge transfer and training, and the sharing of ideas remains essential for product development and market success.

- Openness also plays an important role in relation to the actual 3D printing process. While the case study authors noted a general preference for proprietary software among their interviewees, and for proprietary 3D printers in FabLabs, all social entrepreneurs using 3D printers who were interviewed, expressed a strong preference for open source printers – for various reasons.
- The case study authors also observed that there is a dynamic of sharing with social entrepreneurial projects typically using open source designs created by third parties; and sharing back their new, customised, or improved designs with the public.
- The study also found that while not many social entrepreneurs make use of 3D printers situated in FabLabs to print their products, FabLabs can play an important role at different stages of the social entrepreneurial process in that they offer an environment for social entrepreneurs to learn, experiment, and prototype with 3D printing technology.
- Lastly, one important objective of Open AIR is to better understand the meaning of “scaling” or “scaling up” in the context in which Open AIR operates. And against this backdrop it was an interesting finding that the social entrepreneurs interviewed for this study interpreted “scaling (up)” not so much as increasing the size, turnover, or profit of their business, but as becoming more sustainable and increasing the impact of their activities.



Digital tech hubs and knowledge governance: Innovation entanglement as a scaling-up strategy for tech hub sustainability and advancement

Luci Abrahams and Yolisa Kedama

This study sets out a view of the nature of tech hubs, their modes of knowledge enablement, their complex context of knowledge creation, their measures of success or failure, and their evolution. The study is based on three case studies conducted over the period December 2016 to September 2017 at the Bandwidth Barn Khayelitsha, Tshimologong Digital Innovation Precinct, and Workshop 17. The work aims to understand their distinctiveness as a formation emerging in the early 21st century, as well as the commonalities that lead to “scaling up” in tech hubs. Analysis of the findings indicate that the ingenuity of the tech community is a key ingredient in tech hub evolution, though this is tempered by the adversity encountered with respect to low-resourced environments and the challenges of the soft processes. Values of sharing and community have the potential to lift the tech hubs beyond their constraints. A sense of innovation entanglement resonates through the words of the respondents, a deep engagement with digital enablement as users and producers.

Analytical super theme: Scaling up as a soft science

The overarching theme for the data analysis focuses on the political economy of tech hubs, community values, and strategy for tech hub evolution. The political economy of tech hubs relates to the conceptualisation of the tech hub as a community, needing to operate through community governance modes, rather than business-style corporate governance or institutional governance, while creating entrepreneurial ventures. Ideas around community governance are at a rudimentary stage in the tech hubs studied, though key elements appear in the data. With respect to values, collaboration appears as one of the strongest values, mentioned in some form by every respondent. Collaboration sounds vague, but is critical. These apparently softer factors are becoming

more important than in the past, including connecting, communicating, sharing, and understanding the power of variety and diversity of contributions to innovation. Intangibles are becoming more important, highly regarded, because they create the kinds of relationships where there is a vested interest to invest in people in your own and in other tech communities. With respect to strategy for tech hub evolution, the data indicates that the three tech hubs operate on soft strategy, with no formal written strategy, and no annual strategy breakaways as has become typical in corporate, government and non-profit institutions.

Theorising about scaling up

Analysis of the data leads to a pyramidal view of the key elements emerging from this study as components in the scaling up of tech hubs. The theory sets out three parameters and 13 elements for understanding “scaling up”, specifically in the context of tech hub evolution, based on the data from the three case studies. For example, it would appear that scaling up requires partial or full immersion of the tech hubs, of tech hub management, and of tech hub community members, in soft complexity, which may also be referred to as a state of entanglement. The notion of research entanglement arose in a previous study (Abrahams, 2016) and the concept of entanglement is further developed here. The particular form of immersion found in this study involves entanglement in: (i) the tech hub political economy, in (ii) values pertinent to digital innovation; and (iii) innovation strategy for precompetitive and competitive success, in economic and social markets for digital innovation adoption and digital innovation production. Innovation entanglement can be a strategy for successful scaling up because it recognises the intangible features of innovation as being just as important as more traditional business and economic models, and innovation theory.

Skills development, knowledge and innovation at Suame Magazine in Kumasi

Yaw Adu-Gyamfi

RESEARCH PROJECT OBJECTIVES	FINDINGS FROM RESEARCH
1. To understand the emerging characteristics and challenges for digital entrepreneurship in technology hubs (tech hubs), in the informal sector and in local communities in Africa.	<ul style="list-style-type: none"> ● The artisans of Suame Magazine require continued external support to facilitate innovation, and to address innovation stagnation challenges. ● The introduction of digital manufacturing technologies can help address the challenges of innovation stagnation. ● This will require informal artisans cooperating with the private sector, government, development organisations, and academia. ● The maker movement in Ghana needs to make an effort to: involve local artisans; to facilitate the importation of digital technologies; and to pursue projects that are rooted in the realities of informal manufacturing. ● The maker movement must acquire additional resources and funding in order to make their equipment available and attractive to informal artisans, who would otherwise dismiss the workshops as purely academic.
2. To scale up collaborative and open innovations that can lead to positive social and economic impacts in Africa's increasingly networked economies.	<ul style="list-style-type: none"> ● There is a need for enhanced collaboration among Suame Magazine artisans, the private sector, academia and government, to improve skills, quality control, and competitiveness; and to develop appropriate technologies and innovations that address development challenges.
3. To translate knowledge into new policies and more effective practices for business in Africa.	<ul style="list-style-type: none"> ● Artisans in Suame Magazine in Kumasi share knowledge and innovation in an open and collaborative environment. This provides an opportunity to develop policies and intellectual property frameworks that are not restrictive to the development and access to innovations and knowledge to spur business development within Ghana and across West Africa where economies are networked within an Economic Community of West African States (ECOWAS) zone.
4. To build current and future research leaders in Africa, and to promote partnerships among African researchers in open innovation, and collaborative, entrepreneurial business models.	<ul style="list-style-type: none"> ● The Open AIR network offers training, mentoring and practical on-the-ground research that builds capacity within themes that promote partnership. Research findings outline similarities in cluster nature, collaboration, knowledge, and innovation sharing. ● In South Africa, the informal sector automotive repair industry and the Otigba cluster in Nigeria, have similarities in access to knowledge, innovation, and collaboration with what pertains at Suame Magazine in Ghana. This is fostering interactions and partnerships between Ghanaian, Nigerian, and South African researchers around sharing, building on findings, and advocacy.

Retooling and establishing industrial maker spaces will contribute to improved capacity and standards.



Detailed findings from Open AIR's research themes

High Technology Hubs

Our research confirms that the current decade has witnessed an incredible proliferation of high technology (high tech) hubs on the continent. Open AIR was among the first research-focused networks to identify this trend (Elahi et al., 2013), and then to propose both conceptual and empirical research to study it.

Pioneering knowledge

Since then, our researchers have been world-leading contributors to the body of new knowledge about tech hubs in developing countries. Here are a few examples:

- Comins and Kraemer-Mbula (2016) identified that in South Africa, innovation hubs are changing modalities, from traditional science parks to more modern arrangements based on co-creation.
- A team of Open AIR researchers in Kenya and Canada developed a new framework for classifying tech hubs according to their structure and interactions. This framework helps us to characterise these hubs as companies, clusters, and/or entire countries, while recognising that these classifications overlap and interact in interesting ways (de Beer et al., 2017).
- Building on these initial studies, Kraemer-Mbula and Rutenberg (2018) explored the various modalities of so-called innovation hubs, the activities run by these hubs, and the role they play in boosting innovative entrepreneurs in Africa. They paid particular attention to the diversity of the hubs and their connection to the broader innovation ecosystem.
- Abrahams and Kedama (2018) also set out a view of the nature of tech hubs, their modes of knowledge enablement, their complex context of knowledge creation, their measures of success or failure, as well as the commonalities that lead to scaling up in low-resourced environments.



Researching activities at tech hubs

In addition to carrying out pathbreaking work to build analytical frameworks, Open AIR researchers have undertaken deeper dives into the activities at tech hubs in different countries, which will facilitate valuable comparative work. For example:

- El Houssamy and Rizk (2018) examined power relations in Egypt's technology hubs. They observed that governmental university-based hubs have similar responses regarding the overarching knowledge governance framework; while there is a different ownership model in private sector hubs.
- Some of our in-depth studies look at the impact of tech hubs on more established technologies, like mobile communications and/or software. For example, Nzomo et al. (2018) dive into open collaborative models of innovation in Kenya's mobile tech sector by tracing the paths that 25 different start-ups have taken since incubation at Nairobi's main tech hub, the iHub. The start-up culture, researchers observed, is one of open collaboration which is considered as key for scaling up, as it allows companies to optimise their business models without losing sight of their specific product and service offerings.
- Chuma-Okoro and Adewopo (2018) looked specifically at open versus proprietary business models for software in Nigeria's tech hubs.
- Baraki (2018) explored both software and hardware focused start-ups at Ethiopia's leading hub.
- Schonwetter and Van Wiele (2018) also addressed issues around open source hardware in their study of 3D printing at FabLabs, a particular kind of tech



hub, in South Africa and Kenya.

- So far, Open AIR research reveals limited engagement with other emerging technologies, such as artificial intelligence and robotics, at high tech hubs. But this is likely to change quickly.

The various hubs include the following initiatives: government-led, private for-profit, not-for-profit, and hybrid models; as well as makerspaces that are focused more on prototyping and physical product incubation, rather than strictly on innovations in high technology. While there are some tech hubs that are focused on a particular industry, for example financial technologies or “fintech” this industry or specialised sector-focus was not generally apparent.

Overall, it seems that tech hubs are not yet deeply integrated into the institutional environment for digital transformation. Yet, they are one of the key institutional building blocks for Africa’s digital future. Hence, their sustainability and evolutionary scaling up is to be nurtured.

A common thread is that these hubs encourage networking and sharing of resources among hub users. Open AIR researchers observed that makerspaces especially exemplify fluid overlaps between the formal structures of high tech hubs and the more organic institutional arrangements of the informal sector that drives much innovation on the African continent.

Informal Innovation

Informal economic activities have persisted, proliferated and flourished on the African continent in recent decades. Open AIR network members have been among the first and few researchers to recognise this fact and integrate informal sector innovation into empirical research and policy recommendations (Elahi et al., 2013; de Beer et al., 2014; Kraemer-Mbula and Wunsch Vincent, 2016). We have tackled two general topics under the theme “informal innovation”:

- (a) Determinants and indicators of open innovation to sustain and/or scale informal enterprises
- (b) Communities of practice and places where innovators openly “make” things, i.e. makerspaces.

Open AIR has brought new light to the underlying dynamics of informal entrepreneurship. In particular, we have identified the ways in which skills are developed informally through apprenticeships and other modes of training and knowledge sharing; and we have identified the conditions under which informal economic actors decide to share or protect their knowledge.

Factors that influence openness and collaboration:

- Open AIR’s study of 200 enterprises in one of West Africa’s largest ICT hardware clusters shows how “openness” can be used as a metric for the measurement of innovative capability (Jegade and Jegede, 2018).
- A parallel study in Ethiopia identifies factors that influence collaboration and the spread of knowledge among micro and small enterprises, including financing, location, products and processes, education, and knowledge appropriation strategies; all of which affect scalability (Belete, 2018).
- In a stratified sampling of 206 micro, small, and medium enterprises in Botswana, Ama and Okurut (2017) identify financing, marketing, and networking as among the challenges and benefits of open innovation.
- Open AIR research in Ghana examines how a “micro-franchising” model can help sustain and scale up STEM (Science, Technology, Engineering, and Mathematics) education (Beem and Adomza, forthcoming), as well as strengthen the connections amongst Kumasi’s largest cluster of industrial innovators and the global maker movement (Adu-Gyamfi and Adeji, forthcoming).

From our series of studies in this theme, it is increasingly clear that whilst there are visible connections between informal enterprises and formal organisations, most informal economic actors still operate in the margins of the broader innovation system. Such marginalisation hinders their ability to scale up and expand. Policies must accommodate the knowledge sharing dynamics that exist in the informal economy (especially at the product and service development stage), while ensuring that informal enterprises can still reap the benefits of their innovations at the commercialisation stage.

Openness and collaboration improve the ability of informal entrepreneurs to acquire new skills, and to have access to improved technology and knowledge to enhance products and services. Contextual, cultural, and temporal perspectives ought, therefore, to be central to IP and innovation policy development.

Tapping into collaborative communities, such as the maker movement, holds great potential for informal entrepreneurs to up-scale, access larger markets, and engage in technological innovations. Yet no research network anywhere in the world is doing the kind of conceptual and empirical research on makers that Open AIR is coordinating. It was barely three years ago that Open AIR proposed this thematic research, just as others began to write about the potential of Africa's maker movement (Ekekwe, 2015).



Significant progress in maker movement research:

As first movers studying the impact of makerspaces for development, Open AIR has in the past several years pioneered studies of maker movements across the continent (Ellis, 2016; de Beer and Baarbé, 2017):

- Our first concrete step was to conduct focused, qualitative research in South Africa's Gauteng Province on what we called maker "collectives" (Kraemer-Mbula and Armstrong, 2017).
- Shortly after this pilot study, we expanded the scope of research to all of South Africa, iteratively developing a set of 13 spatial, activity, and management-related variables that could be used to characterise different kinds of maker "communities of practice" (de Beer et al., 2017).
- Around the release of these studies, we hosted a major workshop to connect dozens of South African makers and Open AIR researchers (Open AIR, 2017).
- Subsequently, we published our insights into the "institutionalisation" of South Africa's maker communities as the lead article in a peer-reviewed scholarly journal with global reach (Armstrong et al., 2018).
- Since our early work in South Africa, we have conducted empirical research into maker communities in Kenya, Ghana, Ethiopia, Egypt, Tunisia, and Morocco. Our North African research (Egypt, Tunisia, and Morocco) reveals, for example, that user innovation in maker communities can provide significant employment opportunities (El Houssamy and Rizk, 2108).
- We have adapted our methods and expanded our network to also do research and network with makers in Senegal, Burkina Faso, and Cameroon (Herve, 2018).
- We have participated as co-sponsors of events through which Open AIR is now connected with makers and maker researchers in South Sudan, Togo, Benin, Angola, and many more countries (Armstrong, 2018; Maselwanyane, 2018).
- We are now embarking on cross-regional comparative research into maker movements in Canada and on the African continent, including via collaboration with Ontario's main network of makers (OMMIC, 2018) on topics such as making among refugee communities.

Through these activities, our network has uniquely combined groundbreaking conceptual and empirical scholarship with truly practical action research.



Indigenous Entrepreneurship

Indigenous peoples and local communities (IPLCs) in Africa and elsewhere maintain a relationship of dilemmas with the ICTs of the digital revolution. But very few researchers are juxtaposing the knowledge governance issues that face IPLCs with other aspects of innovation and IP, such as those arising from high tech hubs or informal sector innovation. Open AIR's earlier strategic research shows convincingly why these three related thematic areas must be studied together (Elahi et al., 2013; de Beer et al., 2014).

Through our most recent research in this theme, we have demonstrated how the uptake of ICTs in various forms and contexts by IPLCs has been a source of economic empowerment in ways that have the potential to make IPLCs active participants in the digital economy. But IPLCs have yet to be fully entrenched and consolidated in the dynamics of ICTs (Oguamanam, 2017).

"Traditional" knowledge driving innovation

Open AIR is at the forefront of research that reframes IPLCs' "traditional" knowledge as valuable input driving innovation and entrepreneurship. Our research encompasses the following:

- Nigeria's movie industry (Nollywood) is a critical repertoire of African entertainment, a socio-cultural force for many Africans, and a massive driver of employment and innovation. However, through the use of cutting-edge digital technologies, such as 4K filming and technology-intensive production techniques, Nollywood seems to be scaling down. The focus is shifting from high-volume/low-margin local storytelling to low-volume/high-margin blockbusters (Oguamanam, 2017). Openness has broken down industrial barriers to entry via a permissive and democratic process of open recruitment, mentorship, intermediate training, and curating of talents outside conventional frameworks. However, it remains to be seen whether this will continue, because globalisation and transnational content acquisitions threaten to deprive the industry of full control.
- Also, our research into Nollywood shows that the deliberate and pragmatic inclusion of outliers (usually alienated as pirates) as meaningful partners and stakeholder in an IP system as informal movie marketers, reflects a novel knowledge management or governance framework that seeks an inclusive understanding of stakeholders whose value and interests need to be recognised.
- In Kenya and Rwanda, Ouma (forthcoming) shows how indigenous and local



women entrepreneurs can further enhance their collaborative model of knowledge production in handicrafts by leveraging digital opportunities.

- Laltaika's (forthcoming) study of the business of Maasai beadwork also reveals opportunities to empower women and girls via digital technologies and social media.
- In South Africa, Rutert and Traynor (forthcoming) find that traditional healers and conservation activists represent the region's rural and economically-deprived populations. Their motivation is anchored on self-preservation and self-identification, which challenges our emphasis on purely economic opportunities, and uncovers the value of social entrepreneurship as critical.
- In Uganda, Dagne and Oguamanam's (forthcoming) study of indigenous entrepreneurship in agriculture shows the potential of digitally networked technologies as core facilitators of collaborative knowledge production. Agricultural entrepreneurs are developing digital branding strategies (using geographic indications) in ways that optimise returns and ensure that the socio-economic benefits of innovation are equitably returned to rural farmers, especially women.

While Open AIR's studies on cultural industries, handicraft production, and environmental activism have shed valuable light on innovation driven by traditional knowledge (especially empowering women and girls), our focus for this theme going forward will be on linking big data-driven innovation with local knowledge.

Metrics, Laws, and Policies

This cross-cutting, foundational theme aims to develop a sharper lens to better capture the reality of innovation in Africa, and then to use fresh metrics to improve laws and policies. Our alternate depiction can inform development planning in general, and innovation and entrepreneurship policymaking in particular, and would better enable innovation in the context of Africa.

Our research is moving towards devising new grounded theories about knowledge and associated measures of innovation in the African context. This work is intended to provide a concrete framework that can be used in our own specific situational analyses of on-the-ground practices of African innovators, and would also be useful for anyone conducting research on innovation in Africa.

Our work within this theme impacts national and international policymaking. It contributes to global scholarship on innovation assessment by incorporating perspectives of the Global South, with sensitivity to Africa. Open AIR is well-recognised for its pioneering work in this theme by institutions, including the World Intellectual Property Organization (WIPO), the African Union (AU), the New Partnership for Africa's Development (NEPAD), and numerous others.

The foundation for this theme was laid in Open AIR's last book, where it was demonstrated that Africa's contributions to the global knowledge economy are not adequately recognised by existing indicators of innovation (de Beer et al., 2014). Our working paper by Rizk et al., (2017), entitled, "Towards an Alternative Assessment of Innovation in Africa", was the first concrete attempt to set out a positive agenda for addressing this issue. In this paper Open AIR does the following:

- We review current definitions of innovation, as well as attempts and models of measuring innovation in different contexts.
- We describe key works in innovation literature that point to process and product innovation as the essential constituents of innovation.
- We review both the macro and micro indicators that attempt to measure innovation, and argue that both approaches do not capture the full extent of

the innovation that is occurring in the context of the developing world – in this case, on the African continent.

- We outline a way forward based on the sub-themes of collaborative innovation, human capital and skills, and knowledge governance, as pillars of the pathbreaking new “Innovation Activity Index” (IAI) to complement global measures, in better capturing the many aspects of African innovation.

We have already begun to build on this agenda, for example in Hassouna’s (2018) heavily mathematical review of 16 other index methodologies.

Notably, we have already piloted aspects of our new model through fieldwork involving 1 000 micro, small, and medium enterprises in Greater Cairo. To this end, Open AIR partnered with Egypt’s Academy of Scientific Research and Technology (ASRT) to develop a survey questionnaire, based on a compilation of questions adapted from several surveys already conducted in previous literature, such as the Community Innovation Survey (CIS), and questions developed by the Open AIR North African hub team members. The survey was translated and conducted in Arabic.

We are also synthesising evidence from Open AIR’s case study research. We have compiled evidence from the other three Open AIR themes according to the components of innovation that constitute the new IAI. This involved reviewing all case studies and extracting relevant evidence from each, collating stories of collaboration, human skills development, and knowledge governance. This qualitative analysis will complement the survey results and will help define proxies for the components of the IAI.

Toward theory (re)design

Open AIR initially planned to rely entirely on the method of grounded theory, building from the series of case studies just described. We planned on avoiding the temptation to draw on pre-existing theories, assumptions, and frameworks. The challenge with relying too heavily on either preconceived theories or none at all is that understanding is often fragmented and inconsistent across disciplines. Differences in theories are seen throughout many of the disciplines in which Open AIR researchers work, such as in innovation studies and management science, economics and statistics, law, development studies, and more.

For example, the different definitions greatly impact how “openness” is perceived, a key, overarching term in our research. Similarly, there is no consensus definition of what constitutes a technology “hub”, standard definitions of “innovation” do not apply neatly in the informal sector, and there are ambiguities about the true nature of “traditional” knowledge. Similarly, initially we assumed that common understanding existed about the term “scaling up”, another term important for our outcomes. We have since realised that, like “openness”, understanding differs among different disciplines, regions, and researchers.

Given our interim research findings, however, we have slightly modified our earlier plans to eschew any pre-established theoretical framework for our research. Instead, Open AIR decided to adopt a hybrid approach, where we perform some basic scoping research (such as literature reviews and meta-analyses) at the same time as our case studies. During the upcoming year, we plan to combine insights from our case studies with findings from our scoping research. That will form the basis for rethinking theories about the scalability of African innovation and redesigning policy.



Putting research into practice

There are five parts to Open AIR's strategy for mobilising research insights into practical outcomes. In our first three years, we have had extraordinary success on all aspects of our strategy.



1. **Leveraging our social capital and connections to key decision makers.** For example, through our now well established reputation and networks, we have been able to connect with key decision makers from international organisations, national governments, and leading scholarly and activist associations.



2. **Engaging stakeholders early and often in the research process to ensure relevance.** We are working directly with the beneficiaries of our research through our participatory action techniques in, for instance, the areas of high tech hubs, makerspaces, and indigenous communities.



3. **Publishing open access, bilingual scholarship, and practical policy materials.** We have created a new working paper series, translated key outputs from previous research into French, and are now "versioning" our materials into briefing notes, handbooks, toolkits, and scholarly articles.



4. **Amplifying our influence through social media and mainstream press communications.** Our website has become an increasingly key vehicle for disseminating Open AIR research results and our expanded social media presence continues to create interest around our work.



5. **Empowering new scholars to understand and share insights in their future endeavours.** Our "new and emerging researchers group" is thriving, with more than 90 current members and alumni. All of our hubs have teams of research assistants training to become future leaders.



Erika Kraemer-Mbula



Connections to key decision makers

A major objective for Open AIR is to raise awareness with influential stakeholders who can act as trusted knowledge disseminators within their varying networks of influence. We see this as the best way to ensure that our findings are used in a concrete manner to influence policies and laws, policymakers, practices of grassroots stakeholders, as well as future research.

We have been proactively seeking institutions and projects with aims similar to ours and that may be able to provide future partnerships as well as act as conveyors of our findings. Much of Open AIR's strategy is to use our networks – as well as expand them – of influential organisations and persons to help us reframe the way IP and knowledge governance are looked at.

In the past three years, we have seen a marked increase in the recognition and reach of the Open AIR network among international policymakers, both globally and in Africa. Several of our hubs and researchers state that their affiliation with Open AIR has enabled them to gain access to policymakers as well as additional funding for Open AIR's and their own research. We are pleased that Open AIR's data and findings are reaching policymakers and making a tangible impact.

In our first year, we reported on new foundational research, such as that contained in Open AIR researcher, Erika Kraemer-Mbula's latest book on innovation in the informal sector. Since then, we have seen that laws that work against the informal sector are being reconsidered because policymakers are realising the value of these businesses. Open AIR worked with the World Intellectual Property Organization (WIPO) to send copies of the book to all of our network's researchers. An official from the African Regional Intellectual Property Office (ARIPO) even contributed to the book. As a result of the latter, then ARIPO Director General, Fernando Dos Santos, had conversations with Open AIR researchers at a major conference "Intellectual Property Statistics for Decision Makers" in Australia. and Open AIR representatives then met with ARIPO senior officials at ARIPO's headquarters in Harare, Zimbabwe, in March 2017, where we discussed our research results and established a memorandum of understanding between ARIPO and our hub at the University of Cape Town regarding future collaborations.



Fernando Dos Santos, Director General, ARIPO

Open AIR's research has also had an impact at the United Nations (UN). Our strategic foresight research led directly to a collaboration with WIPO, UN Women, and UNESCO, on future scenarios to accomplish Sustainable Development Goal (SDG) 5 by empowering women and girls in science, technology, and innovation. Open AIR research is now front and centre in work on this topic.

Further, the aforementioned book, with Open AIR Kraemer-Mbula as lead editor, was highlighted at the UN headquarters in New York. The book also includes chapters from Open AIR researcher Jeremy de Beer and a commentary from longstanding collaborator, Dick Kawooya, about his Ugandan study of formal-informal sector interfaces in Uganda. Open AIR methodology for researching IP and informal sector innovation was instrumental during the formative phase of the project that led to the book. Its presentation at the UN in October 2017 was an exceptional opportunity to reach international policymakers and reaffirm the importance of the informal sector in innovation on the African continent.

Open AIR's reputation also triggered our consultation with the UN Economic Commission on Africa, and has led to us having an influential role in the negotiation process toward the Continental Free Trade Agreement for Africa. The value of Open AIR's participation so early in this negotiation process, allowed us to have a real chance to shape the priorities and discourse.



Caroline Ncube

Impact on the African Continental Free Trade Area (AfCFTA)

In 2015, Open AIR sent complimentary copies of our previous publications to a senior official at the African Trade Policy Centre (ATPC), who was impressed with our work and met us later that year in Ottawa and Cape Town. This then led us to building a relationship with one of their partners, the UN Economic Commission on Africa. Upon reading about our research and findings, Open AIR was invited to submit a paper on how IP could be best integrated into the then forthcoming pan-African trade agreement. This influential paper established, for the first time, a pan-African strategy for IP, innovation, and trade.

In May 2017, Open AIR was invited to present at an Expert Group Meeting hosted by the ATPC at the African Union (AU) Headquarters, in Addis Ababa, where Caroline Ncube presented Open AIR's working paper and our recommendations for the IP portions of the agreement. This input was included in the Assessing Regional Integration in Africa (ARIA) VIII Report and versioned into a chapter of a book.

The African Continental Free Trade Agreement was signed in March 2018 and the AU Heads of State mandated that a Protocol on IP should be negotiated and concluded in phase 2 of the negotiations. In preparation for this, the ATPC is working on several capacity-building initiatives for the negotiators. As part of these efforts, Ncube was invited to a further Expert Group Meeting in July 2018. This meeting was an in-depth consideration of the prospects and contents of the Protocol on IP. Its work will culminate in a chapter in the ARIA IX Report to be published later this year.



Chidi Oguamanam

Open AIR representatives have been active in Geneva, the epicentre of global IP, innovation, and development policymaking, and our visibility is now recognised at WIPO. Steering Committee member and theme leader, Chidi Oguamanam, has continued to work closely with the “Africa Group”, which is the most important group coordinating African diplomatic, trade, and policy negotiations on the international stage. Open AIR’s role here has already been highlighted in reports on IP-related developments globally, and Oguamanam has been interviewed for comments and news articles related to the 36th session of the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) negotiations. Several blog posts by Oguamanam about these negotiations are also available on Open AIR’s website. We can now see African WIPO representatives mirroring the same objectives of Open AIR. In addition, Open AIR’s research on metrics was acknowledged by WIPO’s representative/chief economist responsible for the Global Innovation Index (GII). These are just some of the achievements we have made to bring about new norms in international discussions on IP.

At national levels, the breadth of the Open AIR network and its activities, has enabled us to reach numerous public and private sector institutions and multipliers with increased awareness about the interrelationship between IP environments and open innovation and development.

The Open AIR network as a whole supported the development of centres of research excellence in the Centre for Intellectual Property and Information Technology Law (CIPIT), Kenya, and the Nigerian Institute of Advanced Legal Studies (NIALS), Nigeria. Both institutions have significantly benefitted from the Open AIR connection: NIALS successfully ran a conference reaching national policymakers, two NIALS staff members are pursuing doctorate degrees with Open AIR leaders at UCT and uOttawa, respectively; and CIPIT has expanded its blog outreach and has been awarded as one of the top educational blogs in Kenya. Our Canadian hub was also able to attract further funding from Universities Canada, through the Queen Elizabeth II Diamond Jubilee Scholarships – Advanced Scholars (QES-AS) Program.

In South Africa, UCT’s IP Unit has become an influential actor and trusted partner to various stakeholders in the various policy and law amendment debates concerning IP, both in South Africa itself and abroad. One case in point is the involvement of our South African-based network members in the ongoing copyright revision process in the country, where Open AIR researchers have led a workshop and given technical advice to the government Committee on Trade and Industry.

In Egypt, our lead researcher is a member of the National Committee on Egypt’s Innovation Indicators, which brings together policymakers, academics, and government representatives working with the Global Innovation Index (GII) representatives at WIPO. She and other representatives of her centre participated in a national meeting to review Egypt’s global GI ranking and helped build research instruments to capture innovation in Egypt. The meeting was attended by WIPO representatives and other members of the National Committee. Further, our Cairo hub is also translating their outputs into Arabic in order to achieve wider policy outreach.



Active engagement with innovators

Our combination of grounded theory and action research has enabled Open AIR to not only connect with international organisations and governments, but also with stakeholders on the ground, bringing the results of our research to those whom it affects the most. For example, Open AIR has been conducting a number of studies – both case studies and overarching thematic research – into the maker movement in Africa. The grounded research in South Africa was featured heavily in our 2017 annual report. Since then, our work has been going on in many different countries. Our researchers, especially members of our New and Emerging Research Group (NERG), have moved regularly between Canada, Senegal, Ghana, Burkina Faso, Cameroon, Kenya, South Africa, and elsewhere.

After a really quick scan:
Wow wow wow! Absolute GOLD!
This research is SO significant in building the value of the SA and African Maker ecosystem!
I feel like a kid in a 🍌🍌🍌 store.
DAY MADE! Thank you x1000 to you four and your teams.
Such meaningful work - M!a

Open AIR's workshop with makers lights a spark

The global Maker Movement is comprised of largely informal, openness-oriented innovation by collectives, with interdisciplinary makers working together in “makerspaces”. Sometimes referred to as an “open source hardware” movement, in developed countries “making” typically involves the collaborative use of digital 3D printers, Arduino circuits, laser cutters and milling machines to create innovative products. Open AIR's research shows the maker culture becoming more visible in Africa and globally, closely associated with the rise of hackerspaces and FabLabs, allowing like-minded individuals to share ideas, tools, and skill sets in pursuit of innovation, job creation, and the invention of inexpensive tools and technologies. Research projects that fall under this theme examine existing or potential links between Africa's informal sector and the global makers' movement.

In March of 2017, Open AIR implemented a workshop for action research in Pretoria, South Africa. This comprised three days of activities linked to South Africa's growing maker movement and invitees included Open AIR's case study researchers under the informal sector innovation theme, as well as representatives from the South African government, and representatives of 11 South African makerspaces. Through site visits, a national workshop, and a hands-on “making” session, Open AIR researchers from Egypt, Nigeria, Ghana, Ethiopia, Kenya, South Africa, and Canada gained a rounded understanding of the ethos, motivations and activities of South African makers.

This workshop had a major impact in South Africa and elsewhere on the continent. In South Africa, new

relationships between the makerspaces were formed, better enabling them to coordinate themselves, work together more often, and determine what policies would be helpful to them. As a direct result of this event, a leader of South Africa's movement travelled to Cairo to participate in this workshop. Indeed, Open AIR researchers have taken and shared lessons from this early event forward throughout Africa.

One way in which we are sharing these lessons was Open AIR's panel at the Africa Open Science and Hardware Summit in Kumasi, Ghana, in April 2018. Open AIR, serving as both a financial and content supporter of the Summit, provided a panel discussion on our research into open innovation modalities, including OSH practices. Open AIR attendees were able to forge valuable links with innovators in several African countries as well as like-minded international networks such as the Global Innovation Gathering (GIG), MakerNet, São Paulo Lab, and the Agency for Open Culture and Critical Transformation.

In addition, Open AIR NERG Fellow Thomas Hervé Mboa Nkoudou, was invited to present his research into FabLabs in Senegal at the Afropixel 6 Festival in Dakar in May 2018. This conference not only helped to expand discussions about the maker movement in Africa, but also helped Open AIR to further our efforts to expand our network into Francophone Africa. Open AIR case study researcher, Lucienne Abrahams, also attended the African Tech Hubs Workshop in late 2017. At this workshop there was a focus on knowledge sharing, resulting in much of the time being engaged in group discussions on specific topics. Abrahams met a number of tech hub leaders, particularly from Ghana and Nigeria, and noted that the event was an excellent opportunity to extend our network to have greater continuous contact with tech hub leaders.

QUEEN ELIZABETH *Scholars*

Following on our research in South Africa, this past year, Erika Kraemer-Mbula and one of our NERG Fellows, Outlwe Maselwanyane, attended the Fak'ugesi Festival in South Africa, where they distributed some of the Open AIR materials on makerspaces, met new people, and re-connected with the community of makers. The event was vibrant and packed with visitors. Many attendees, especially the makers, found Open AIR's study very interesting and took many copies of our printed materials. Indeed, our efforts at the South Africa Maker Movement Workshop has since resulted in a number of partnerships between makerspaces in South Africa and has developed into a more connected, more vibrant community, that is better able to work collectively and share insights.

In Kenya, this research resulted in a new makerspace being created at Strathmore University, our Eastern African hub.

Our research across North Africa, which focused on Egypt with anecdotal evidence from Tunisia and Morocco, pointed to the expansion of the maker movement across northern Africa. Makerspaces in Egypt echoed the need for increased government support and recognition for the maker movement, especially since these spaces have the potential to absorb the creativity of youth and ultimately lead to the creation of income-generating products. At Access to Knowledge for Development Center's (A2K4D) annual workshop, stakeholders from the maker movement in Egypt as well as policymakers, were invited for research dissemination, and to create a link between research and action on the ground. One outcome of the workshop follow-up meeting was creating an online portal connecting the different makers that are involved in Open AIR research. This way, makers have access to case study results as they are updated and revisited, and policymakers have access to needs as they arise. An online platform would also allow for stronger connections between makers of Africa, and foster collaborative opportunities. Results from the makerspace study, especially after translation to Arabic, aim to influence policy on how to better support the maker movement in Egypt.



Scholarly publications and presentations

Part of Open AIR's mission is to bring an Afrocentric perspectives to academic debates on innovation and IP. African voices are too often rarely heard in global academic debates, and African contexts are never viewed as places to learn from in mainstream academia. Open AIR has been breaking down these norms, bringing African perspectives, and African voices to the fore. This has also resulted in a number of our African researchers earning recognition for their groundbreaking work.

Open AIR has continued our strong practice of publishing a wealth of interdisciplinary and legal scholarship. Our network members have not only published a number of working papers, but also articles in peer-reviewed journals, chapters in academic books, blog posts and other grey literature, as well as videos. As of August 2018, the Open AIR network has published 16 working papers, with 15 more currently being reviewed and to be published soon. Please see Appendix A.

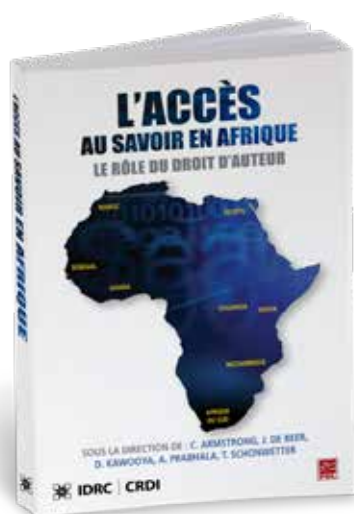
A number of other working papers have also been posted, providing groundbreaking foundational research to frame our way forward, showing the dynamism of innovation on the continent, and the lived experience of African innovators. All Open AIR working papers are freely accessible online on our website. Here are a select few that showcase the range of research, evidence, and theory design Open AIR has been conducting this past year:

TABLE 2: OPEN AIR'S PUBLISHED WORKING PAPERS

	SHORT TITLE	THEMES	AUTHOR/S
WP 1	Evidence-Based Intellectual Property Policymaking		de Beer
WP 2	A framework for Assessing Technology Hubs in Africa	High Technology Hubs	de Beer, Millar, Mwangi, Nzomo, Rutenberg
WP 3	Open Innovation in Development		de Beer
WP 4	The Intellectual Property Treaty Landscape in Africa, 1885 to 2015		Baarbe, de Beer, Ncube
WP 5	Intellectual Property Rights and Innovation: Assessing Regional Integration in Africa (ARIA VIII)		Ncube, Schonwetter, de Beer, Oguamanam
WP 6	The Maker Movement in Gauteng Province, South Africa		Kraemer-Mbula, Armstrong
WP 7	A Data Commons for Food Security		de Beer, Blom, Baarbe
WP 8	A Cross-Regional Research Partnership for Sustainable Development: The Open African Innovation Research (OpenAIR) experience		de Beer, Oguamanam
WP 9	A Scan of South Africa's Maker Movement		Ellis, de Beer, Armstrong, Kraemer-Mbula
WP 10	Towards An Alternative Assessment of Innovation in Africa		El Said, Weheba, de Beer, Rizk
WP 11	Behind the Number: A Review of Index Methodologies to Improve Innovation Measurement in Africa		Hassouna
WP 12	Determinants of Innovation Capability in Informal Settings: The Case of Nigeria's Clustered ICT Microenterprises	Informal Sector Innovation	Jegade
WP 13	Determinants of Innovation in Ethiopian Informal-Sector Micro and Small Enterprises (MSEs)	Informal Sector Innovation	Belete
WP 14	ICTs in Agricultural Production and Potential Deployment in Operationalising Geographical Indications in Uganda	Indigenous Entrepreneurs	Oguamanam, Dagne
WP 15	MSMEs and Open Collaborative Innovation in Botswana	Informal Sector Innovation	Ama
WP 16	Skills Development, Knowledge and Innovation at Suame Magazine, Kumasi	Informal Sector Innovation	Adu-Gyamfi, Adjei

Open AIR has to date published 16 working papers with 15 more in production.

During our writing retreat in August 2017 in Montebello, Quebec, there was significant discussion concerning our publication strategy. A multi-targeted strategy was decided upon; one that lets each researcher decide what medium will be best for their particular research findings. The idea of a compilation book – such as the one produced in our previous phase of research – was deemed to have been effective but no longer ideal for this phase of research. Instead, by deciding to be broader in the types of writings we produce,



Open AIR will be better able to reach stakeholders who may not think of Africa as an innovative continent, or those who may not be aware of what African innovation can teach the rest of the world. As such, some of our research will be presented in journal articles, while others will become policy briefs, and yet others may be chapters in books edited by others. A special issue in one or two journals is being explored, and Open AIR has already been active in speaking at influential African and other international conferences.

We are also proud to say that our pamphlets, translated into French, have been used to good effect to expand our network into Francophone countries. We also produced booklets on three of the chapters from our previous book, translated into French, which we have been distributing in a targeted fashion, with the goal of expanding our network into more Francophone African countries. In addition, in the past year we had new business cards, letterhead, PowerPoint presentations, and briefing note templates designed. As part of this, we created a guideline document to help ensure that all our funders are properly recognised in all Open AIR-related research outputs.



Another way in which Open AIR is ensuring our research is known outside of our network, is our active participation in conferences focused both on law and IP, as well as events focused on other African topics, in order to both communicate our findings and theories as well as set the stage for further results. Open AIR has hosted panels at the Ontario Makers and Mentors Innovation Conference (OMMIC) 2017, the Africa Open Science and Hardware Conference, and RightsCon, helping to spread knowledge about, and expand, our network to new stakeholders and potential partners. Our participation at the Global Economic Institute for Africa in Lagos and at the Africa Innovation Summit in Kigali, also provided extremely high-profile venues for us to present our research, findings, and the network at large. These have since resulted in invitations to other high-level stakeholder meetings, both in private and as part of larger consultations. In this way, knowledge about Open AIR has been spreading organically and exponentially over the years.





The Africa Innovation Summit

This past June, Open AIR was honoured to be invited as a named partner to the second Africa Innovation Summit (AIS 2018) in Kigali, Rwanda. This was an extremely high-level Summit that brought together key stakeholders including innovators, academics, high-level government officials, policy influencers, and youth. The Summit provided an opportunity for the Open AIR network to engage with key stakeholders including high-level government officials, public institutions, other research networks, and innovators across Africa. Our invitation and participation in the Summit demonstrates that Open AIR is making an impact and reaching African audiences, including in countries where we are not currently active, such as in Rwanda. Further, the Summit provided an opportunity for Open AIR to take a leading role by contributing to AIS's mission of finding innovative solutions to challenges facing African countries that are homegrown through the network's research and policy work. Open AIR's engagement was spearheaded by Prof. Erika Kraemer-Mbula who was also the Chair of the AIS Scientific Committee, and was also part of the planning team.

The AIS covered a broad range of topics affecting African countries including energy access, water, health, food security, and climate change. These topics were introduced through five plenary sessions followed by workshops that allowed for the topics to be unpacked and discussed, with the goal of creating solutions to these challenges. The Summit also included the African Innovation Exhibit which, "[showcased] homegrown innovations and innovators on the continent" as well as hackathons which challenged

conference attendees to come up with solutions to specific problems.

At the Summit, Open AIR hosted a well-attended panel on Intellectual Property and Open African Innovation, which featured five Open AIR researchers. Moderated by Open AIR Steering Committee member Erika Kraemer-Mbula, the Open AIR panel consisted of Jeremy de Beer, Chidi Oguamanam, Mr. Emmanuel Sackey (Chief Examiner at ARIPO), and Open AIR NERG Fellow, Nicole Tumaine. The panel provided timely insight into the role of Intellectual Property Rights (IPRs) and other knowledge governance systems in open innovation in Africa. Topics included, how traditional knowledge can be protected and shared equitably and inclusively; how IP is protected in various African countries through ARIPO; youth entrepreneurship; agriculture; youth unemployment; women's empowerment; and the inclusion of marginalised populations. A lively discussion with panel attendees followed, providing insightful feedback and thought-provoking questions regarding Open AIR's research.

In addition, other members of the Open AIR network were in attendance and spoke on panels throughout the Summit, namely those on Entrepreneurship and Innovation, Designing Future Economies, African Enterprises/Business and Innovation, and the European Commission's workshop on Creating Opportunities for Innovation Cooperation between Africa and Europe. Overall, it was evident from the panels and workshop discussions that examining the role of IP in innovation is an important and ongoing topic of interest.

Open AIR research is receiving more citations year by year, and growing in academic partnerships. We have also been able to incorporate our insights into large, networked courses on copyright, which two of our institutional hub leaders, Rizk and Schonwetter, are already pioneering in Egypt and South Africa. The majority of Open AIR hubs are teaching Harvard CopyrightX courses and participate in the annual CopyrightX Summits. Open AIR has been engaging with several other specialised academic institutions and networks. These have included the Legatum Center for Development and Entrepreneurship at MIT; the Centre for Law, Technology and Society (CLTS) at the University of Ottawa; Hassan II University in Morocco; Carleton University in Canada; and Lagos State University in Nigeria, to name just a few examples. Several of our researchers are highly influential teachers and have been asked on numerous occasions by WIPO to assist in the development of IP course and programme curricula, which we plan to continue.

Over the years, Open AIR has also designed and implemented an open access “IP and Innovation” curriculum for use by any university’s law faculty. This is now taught annually at UCT’s law faculty. Open AIR findings have also been integrated into a masters-level course on IP, Innovation and Development that is also taught at UCT on an annual basis, making the course a unique offering that has been described in a University World News article as an important attempt to decolonise the country’s (intellectual property) curricula.



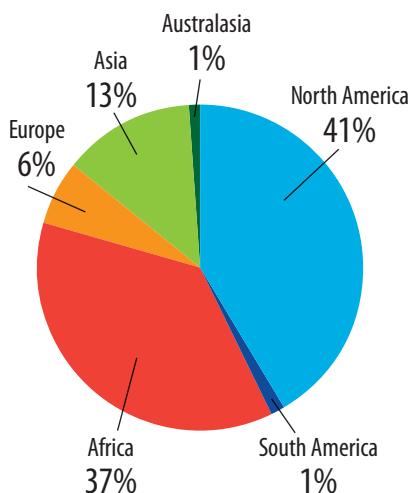
Amplifying messages via media

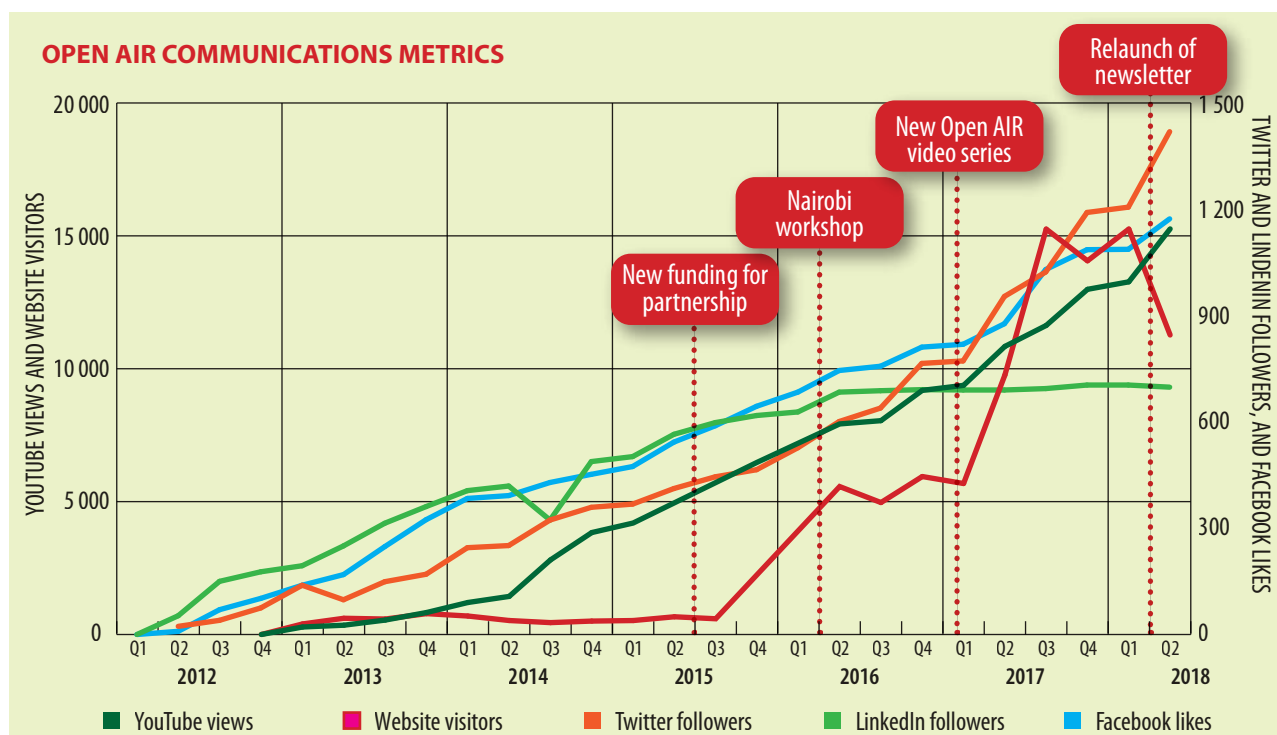
Our website has become an increasingly key vehicle for disseminating Open AIR research results and our expanded social media presence continues to create interest around our work. Over the years it has had a number of changes. We are pleased to say that, due to the increasing number of blog posts, publications, and partnerships, Open AIR’s website is undergoing a facelift; several changes will be made that will help to streamline our website, while still providing the increasing information we have, for those who are interested. We are continuing to make sure that this new look of our website will be easy to access for those with slower internet connections and those viewing it on their phones, as is most common in most African countries. This new website will come online soon, as part of Year 4 of this tranche of funding.

The response to our increased online activity has been better than imagined. In both Year 1 and Year 2, the average monthly unique visitors increased by at least 4 000. This past year, our unique visitors per month increased by an additional 1 000. Our working papers have averaged 570 total views each, well exceeding our target of 400. Much of this traffic is due to an increase in the number of clicks on our Open AIR content posted on Facebook, as well as an increase in the number of visitors being directed to our website through our Twitter profile.

Open AIR has also become increasingly active over social media. This has allowed us to reach policymakers, policy influencers, state actors, international organisations, and average citizens, both in Africa and around the world. As a result of our efforts to increase our social presence, we have been having increasing levels of engagement year on year. The social media platforms currently being used include Twitter, Facebook, and LinkedIn (both our discussion group and a company page), as well as online video services such as Youtube and Vimeo. Since the beginning, Open AIR has been continually tracking its reach on social media and our numbers show a great increase in terms of visibility and impact.

WEBSITE ENGAGEMENT BY GEOGRAPHIC REGION

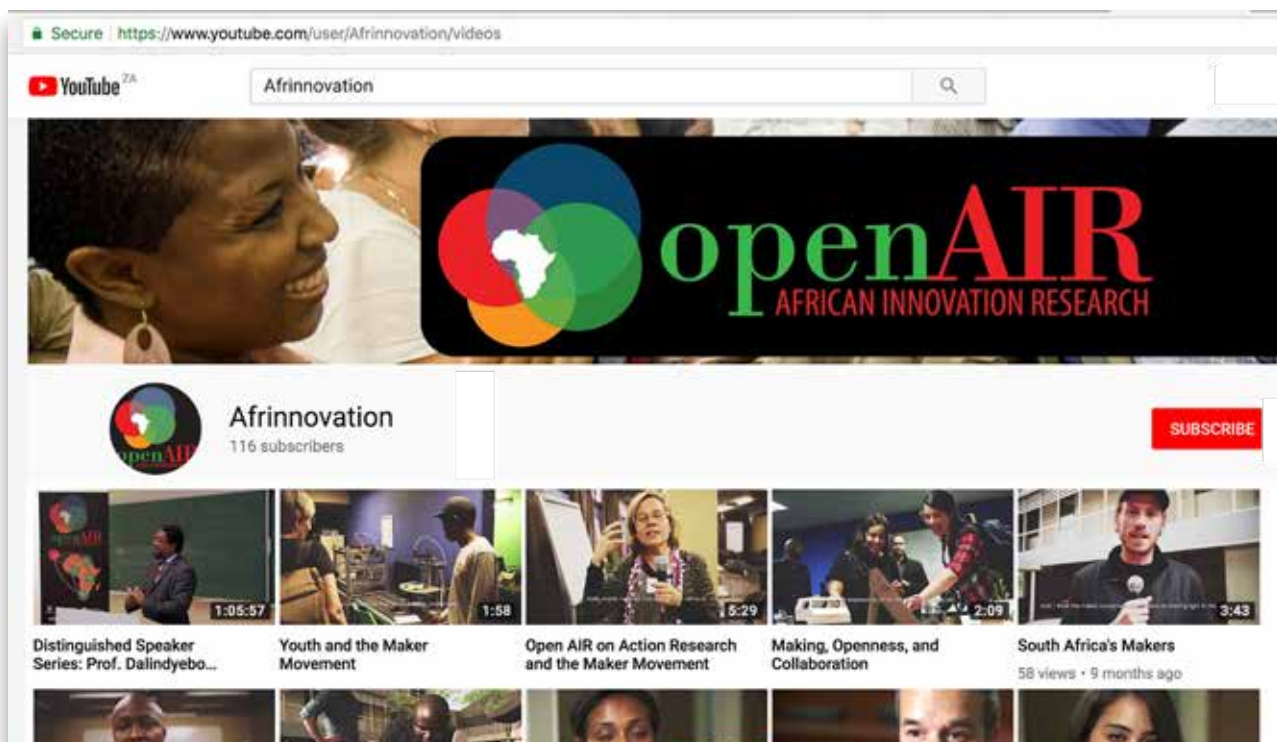




Open AIR's Twitter profile has shown consistent growth over the past three years, with an average increase of over 30 new followers per month. In addition, people viewing our Twitter profile has averaged 714 per month. This growth not only met, but exceeded our targets. Open AIR's Facebook profile has also been showing consistent growth in the number of likes our page gets each year. As anticipated, now that Open AIR's research findings are coming out rapidly, this year we have been publishing more and more original content. This has further increased our online reach.

The reach of our videos has continued apace. These videos include not only general videos about Open AIR and our research topics, but also highlight our researchers as well. Many of our videos have been made purposefully short so as to ensure that people watch them and to facilitate the sharing of them on social media. In the vast majority of our videos, Open AIR researchers speak about their research in their own words. By showcasing our African researchers, we are helping to bring voices from Africa to a global audience. In 2017, during the month that we launched our initial videos, our initial videos in 2017, our Twitter impressions grew from 8 900 to 33 300 (a 274% increase compared to 2016), our links were clicked 163 times (a 579% increase compared to 2016), and our tweets were retweeted 208 times (a 732% increase compared to 2016). Since then, our videos have continued to gain traction. This past year, Open AIR produced six new videos on the maker movement, featuring makers as well as our researchers. These are in addition to the almost 70 other previous videos Open AIR has made, 30 of which were made in just the past three years.

We have sent almost 1 000 copies of our two books to key recipients in governments, Embassies and High Commissions, international organisations such as WIPO, universities, academics, journalists, and many others. These books are also available for free download on our new website. Further, we have produced feature videos and video trailers outlining the contents of the two books, as well as interview segment videos about three of our previous briefing notes, all of which are available on our Afrinnovation YouTube channel



and on Vimeo. Indeed, our YouTube channel has also shown consistent growth over the years, not only in terms of views but also subscribers.

Finally, this year Open AIR launched an online newsletter to further highlight and promote our research work among both the researchers themselves and the many contacts of our network. Each newsletter links to three or four articles, events, and publications, using large, bold headlines, so they can be easily scanned. Our aim is to have a quarterly newsletter for the next four years.

Empowering our people

The NERG remains a point of pride for the Open AIR network. The NERG is a group of young researchers, composed of undergraduate students, Juris Doctor (JD) students, masters students, doctoral students, postdoctorates, and other research associates. These NERGs receive mentoring from Steering Committee members on various research, communication, publishing, and project management skills. NERGs engage in research activities on Open AIR's core questions and, through these activities, have become visible throughout the network and externally. Over the years, NERGs have had the opportunity to be published in top journals, have written working papers, been co-authors on book chapters, spoken at conferences, and more.

Working alongside professors and other scholars has not only given NERG members a chance to network and increase the visibility of their research in Open AIR, it has also fostered the development of professional skills. For example, attending and presenting at conferences, writing articles and papers, and performing participatory research has provided each NERG member the opportunity to develop public speaking skills, time management skills, cross-cultural skills, and more. Further, because the NERG is a self-governing body within Open AIR, whose ombudsperson is a member of the Steering Committee, this allows for added opportunities for building leadership and team working skills.

The NERG ombudsperson is the key point of contact between NERG



Abdelhamid Benhmade, Bram van Wiele, Dana Elbashishi, Mennatallah Badreldin

members and the Steering Committee. The role of the NERG ombudsperson continues to be rotated across different hubs; Nagham El Houssamy (Cairo hub) was the first NERG ombudsperson, followed by Meika Ellis (Ottawa hub), and then Victor Nzomo (Nairobi hub) last year. Since July 2018, the ombudsperson is Johannesburg-based Fellow, Elvis Avenyo. This rotation between hubs has allowed the NERG to be truly representative of the network, and has not assigned priority to any one hub over another.

At present, the number of active NERG members (not counting our alumni) has grown from 20 at the end of 2017 to 35 at the end of 2018. The increasing number of NERG members, spread across each of our different hubs, has enabled members to find innovative ways of connecting, both virtually and through face-to-face meetings. Use of online tools such as Slack and Whatsapp, have enabled NERG members to communicate, share, and collaborate on several research projects, conference presentations, and more.

Over the years, Open AIR has had several workshops, the most recent being held in Accra, Ghana (see page 71). Each workshop has been attended by several NERG members, fostering increased interactions between NERG members located in different hubs through face-to-face meetings. The workshops have also enabled NERG members to deliberate on several issues of importance to them, such as collaboration among NERG members, discussions with Steering Committee members, ideas for funding, and so on. To continue facilitating these in-person meetings, NERG members and the NERG ombudsperson are working together to share information about relevant conferences and possible exchanges between hubs.

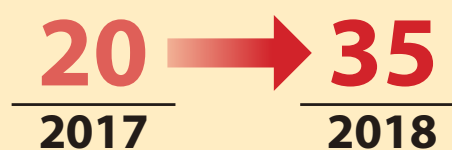
Since the beginning, NERGs have attended and

participated in several conferences, offering NERG members the opportunity to meet and interact with other NERGs, Open AIR collaborators, the Steering Committee members, and other scholars, as well as increase both the NERG and Open AIR network's visibility externally. With financial support from Open AIR, NERG members have attended several conferences and workshops in various capacities, networking with local, national, and international scholars, and have shared their experiences in a series of blog posts on the Open AIR website. These are listed in Appendix A.

One of the core goals of the NERG is to increase cross-sector learning by having NERG members work alongside academics in multiple disciplines, non-profit organisations, intergovernmental institutions, and others. The funding provided by the Queen Elizabeth Scholars (QES) Program, has allowed Open AIR to attract new NERG Fellows, as well as to provide them with opportunities to conduct research across several of our hubs. As of July 2018, three QES have had the opportunity to travel between Open AIR hubs. We anticipate that several more will have this opportunity in the next two years.

One of our case study researchers, Oluseye Jegede, was inducted as a member of the Scientific Board for the Africalics Community (part of Globelics) and has become an organiser for a PhD Academy.

NERG NUMBERS INCREASE



**Oluseye Jegede
(currently at the
University of
Johannesburg)**

Everything happened so fast! Erika played a very vital role in my rapid development; she believes in me and challenges me with responsibilities that will develop me. Thanks to Open AIR as well for discovering me and entrusting me, I have become a member of the Africalics Board. I am the youngest board member ever! Thank you all. I look forward to spending the whole of my career with Open AIR, as it grows and expands.



Nicole Tumaine (University of Ottawa)

Over the past four months, I have had the privilege of attending three international conferences as a panelist thanks to the generous support of Open AIR. It is astonishing to me how often voices of marginalised populations are left out of key conversations. With all this talk about more inclusion and representation, we are still leaving key voices behind. We need to create spaces for these voices to be heard and I am proud that Open AIR is doing just that and that I get to be a part of it.



Uchenna Ugwu (University of Ottawa)

Being part of Open AIR gives me the ability to reach out and exchange ideas with other people who are knowledgeable and passionate about innovation and Africa. This is what I value most about the network. Open AIR is an environment that helps me in forming ideas that are relevant to contemporary issues relating to IP and innovation, that are practical, and that can make a difference and contribute (no matter how small) in today's world.



Open AIR: Leaders in our field

Over the past three years, a number of Open AIR researchers have received honours for their work. While not all are a direct cause of their Open AIR research, it shows that our researchers are of the best calibre and being recognised by their peers for the work they do.

In July 2017, Adebambo Adewopo from our Lagos hub was conferred with the prestigious Senior Advocate of Nigeria Award. This is awarded by the Legal Practitioners and Privileges Committee of the Supreme Court in Abuja, Nigeria. Also last year, Chidi Oguamanam and Jeremy de Beer from our Ottawa hub, were appointed Senior Fellows at the Centre for International Governance Innovation (CIGI). Most recently, in June 2018, Nagla Rizk of our Cairo hub, received AUC's 2018 Excellence in Research and Creative Endeavors Award. This award recognises AUC faculty whose achievements have been nationally and internationally recognised over the past five years. These represent only some of the numerous awards and recognitions our researchers have received over the years.

Open AIR is especially proud to see one of its Steering Committee members receive a SARCHI research chair! The South African Research Chairs Initiative (SARCHI) is an award administered jointly by the Department of Science and Technology (DST) and the National Research Foundation (NRF). It is designed to attract and retain excellence in research and innovation at South African public universities, to strengthen and improve research and innovation capacity of public universities for producing high quality postgraduate students, and research and innovation outputs. SARCHI chairs are at the forefront of research in their fields, and the award is considered one of the most prestigious in the country, on par with many global awards.

This year, Caroline Ncube of UCT was awarded a SARCHI research chair in Intellectual Property, Innovation and Development. This is a well deserved acknowledgement of Ncube's contribution to the field of intellectual property law and her focus on the promotion of public interest and innovation.





One of Open AIR's ongoing aims is to create more research leadership capacity on the continent. Toward that goal, Open AIR convened a major conference in Lagos, Nigeria on the subject of research grant writing and administration.

Building research grant capacity in Africa's most populous country

A number of senior Open AIR members participated in the Nigerian National Workshop on Research Grant Writing and Administration, hosted by Lagos State University (LASU), Ojo Campus, from February 13–14, 2018. This included a Vote of Thanks and Closing Remarks by Open AIR collaborator and lead researcher, Professor Chidi Oguamanam.

Nigeria has 40 federal universities, 44 state universities and 74 private universities, all approved by the Nigeria Universities Commission. This is a truly impressive number of universities, but it has proved challenging to provide the capacity to so many academics that is required to allow them to successfully attract research funding, both local and international. This is closely linked to the need for university resource persons who are specialists in the complexities of research grant writing and grant management. Thus, the audience included researchers, academics, postgraduate students, and university administrators at all levels. Education policymakers and representatives of funding agencies were also present.

This conference was not a simple checkbox for attendees or a series of dreary lectures. All panelist were only given 5 minutes for their presentations, followed by questions and answers. These resulted in lively discussions with many interesting, insightful, and challenging interventions. Moreover, a unique feature is that workshop participants had assignments to take home on the development of a research grant idea. These have been getting ongoing feedback, coordinated by Professor Peter Okebukola. The result is that organisers and participants can assess the extent to which they have increased their understanding of research grant writing skills and knowledge transfer.

Open AIR owes a special thanks to the Vice Chancellor of LASU, Professor Olanrewaju Fagbohun, who opened the workshop and attended throughout the two days; as well as to Professor Chidi Oguamanam, who was the key motivator and organiser of the workshop.



Connecting across languages and in new countries

Becoming a multilingual research network is an important goal for Open AIR. Over the last three years, Open AIR has been expanding further into French and Arabic speaking African countries through both our network of contacts and partners, as well as making our materials available in other languages. Becoming multilingual not only opens Open AIR to new partners and audiences, it also opens the network to new perspectives, allowing us to be a truly pan-African research network.

Our North African hub is translating outputs into Arabic, as part of the larger Open AIR expansion and outreach effort to Arabic speaking audiences in Africa. In 2018, the Access to Knowledge for Development Research Center translated its two case studies, in addition to the working paper, "Towards an Alternative Assessment of Innovation in Africa" part of the Open AIR Working Paper Series, into Arabic in order to promote a wider readership base. The first translated case study, "The Maker Movement across North Africa", constitutes research conducted in Egypt, Morocco, and Tunisia, all of which include a significant Arabic speaking audience. The second translated case study, "Power Relations and Knowledge Governance Systems at Technology Hubs: The Case of Egypt", is based on research conducted in an Egyptian context, where Arabic is the primary language. The working paper revisits the literature on innovation in general and on innovation in Africa in particular, and outlines the hypotheses for the theme going forward. The translation of both case studies as well as the working paper aims at encouraging engagement with a wider audience, including Arabic speaking scholars in the region, as well as a larger number of policymakers.

Open AIR has been working hard to expand our research and outreach into Francophone Africa. In 2016 and 2017, significant strides were made with the translation and publication of three key chapters from our book, *Innovation and Intellectual Property: Collaborative Dynamics in Africa*. We also produced our informational pamphlet in French and had an emerging scholar and a student – both NERG Fellows – design an engagement plan for Open AIR. In 2018, we appointed a Francophone coordinator, Esther Ngom, who is located in Cameroon and has been a long-time member of Open AIR as a NERG. In this role, she is promoting more work on Open AIR's research themes in the



Sara Yassine

French language. Her immediate goal is building an IP law research lab at the Catholic University of Central Africa in Yaoundé, Cameroon, which should be operational this year. Open AIR aims to have this grow into a new Francophone hub of the research network, increasing our access to French-speaking African scholars and policymakers. The lab is off to a great start and will be in the coming months sending out a call for applications for its own bilingual IP journal.

In addition, in the past few months our Francophone team has grown to include three more NERGs of high calibre. These are Sara Yassine, based in Casablanca; Thomas Hervé Mboa Nkoudou, based in Quebec City; and Abdelhamid Benhmade, based in Ottawa. This team will continue the great work by Esther Ngom and improve Open AIR's capacity to implement our Francophone expansion strategy. It will also conduct groundbreaking research in Francophone African countries.

Over the past three years, Open AIR has deepened its relationships with existing French-speaking organisations. In July of 2017, the research network met with the Entrepreneurship and Management of Organizations Lab (LABOEMO), of Hassan II University in Morocco. The LABOEMO is a top tier French-speaking entrepreneurship research unit whose partners include the International Labour Organization (ILO). We have been in close contact with LABOEMO since our first meeting, especially through Sara Yassine, our new QES and NERG Fellow. Our collaboration looks to improve the measurement of innovation, a perfect fit with Open AIR's metrics theme.

Further, in May 2018, NERG Fellow Thomas Mboa Nkoudou moderated a productive French language debate on FabLabs at the Afropixel festival in Sénégal. Thomas has also produced original French content for the network including a number of blog posts. In June, Esther Ngom hosted an information session in Dakar. This event was such a success that the organisers have requested that next year's conference be hosted by Open AIR in Yaounde. We have also had meetings with the Director General of the African Intellectual Property Organization (OAPI) and were invited by Cameroon's Ministry of Environment to be an expert on the committee discussing revisions to Cameroonian laws on access and benefit-sharing of genetic resources. We have collected a list of organisations already interested in Open AIR's research outputs and/or becoming more involved with Open AIR over the next few months and years. These include government ministries, civil society organisations, makers, academics, and promising new scholars.



Abdelhamid Benhmade



**CENTRE ENTREPRENEURIAT
ET PERFORMANCE DE LA PME**

Laboratoire de Recherche en
Entrepreneuriat et Management
des Organisations



Thomas Nkoudou



Esther Ngom



Reports from our research hubs

The Open AIR Network consists of several institutional hubs: the University of Ottawa; the American University of Cairo (AUC); Strathmore University; the University of Cape Town (UCT); the Nigerian Institute of Advanced Legal Studies (NIALS); and the University of Johannesburg (UJ). This collection of educational institutions provides our organisation with a physical presence and, thus, an intimate connection with, and access to, local communities in North Africa, Southern Africa, East Africa, West Africa, and Canada.

In all of our hubs, Open AIR is one of the flagship projects and one of the largest projects in which the hub leaders are involved. This involvement correlates extremely well with the missions of all the departments in which the project is located. These investments in organisations/institutions are crucial to the sustainability of the network, because the institutions will remain, even when individuals may leave.



American University in Cairo

Over the past year, the Access to Knowledge for Development (A2K4D) has been heavily involved in the metrics theme research and in finalising our two case studies. We have also been increasingly involved in other metrics-related research with other institutions and partners. Further, A2K4D has been building partnerships and expanding our activities into Northern and Francophone African countries. We continue to engage various communities to ensure our research is accurate, relevant, and used, both in everyday society and in policy and academic circles.

Open AIR is implementing our Francophone expansion strategy and,



in this, AUC has been playing a prominent role. As reported last year, in June 2017, A2K4D hosted Sara Yassine from the Laboratory of Research on Entrepreneurship and Management of Organizations at the University of Hassan II in Casablanca, Morocco. The meeting objective was to introduce Open AIR to Yassine and explore areas of collaboration and integration. A follow-up visit to Casablanca took place in September 2017, with key Open AIR Steering Committee members visiting the University of Hassan II. This relationship has been further developing, with A2K4D hosting Yassine as a visiting researcher in a couple months, as part of her QES research.

A2K4D team members have also continued to visit other hubs and engage in workshops and events, with increased NERG collaboration across the hubs. A2K4D hosted Victor Nzomo from Open AIR's East African hub in October 2017, where he conducted research and presented his research at A2K4D's seventh annual workshop. A2K4D's El Houssamy briefly visited the University of Ottawa hub in October 2017 and presented her Open AIR research during the Makerspace Experiences with Inclusion and Diversity: Canadian and African Cases. This was part of a feature panel at the Ontario Makers and Mentors Innovation Conference (OMMIC) 2017. These research exchange visits serve to identify potential synergies between case studies, and set the stage for comparative work where relevant. In addition, these exchanges allow for the identification of key links between Open AIR's research in North Africa and Canada, as well as provide significant grounding for future comparative research.

Equally as important, A2K4D has been involved in various knowledge dissemination activities. These include giving presentations, participating in workshops, writing blog posts, and producing publications. Most notably, in October 2017, A2K4D held its seventh annual workshop, Collaborative Innovation for Open and Inclusive Development: Data, MakerSpaces, and Mobile Telephony, with a session dedicated to Open AIR research on the maker movement. The session, Global Perspectives on the Role of the Maker Movement in Promoting Development, was moderated by A2K4D's Nagham El Houssamy, and included speakers such as Tania Bryant from the I MAKE Foundation in South Africa, Victor Nzomo from Open AIR's Kenya hub, Bram Van Wiele from Open AIR's Cape Town hub, and Mohamed Galaleldin from the University of Ottawa in Canada.

A2K4D is also working closely with the National Academy for Scientific Research and Technology (ASRT) on innovation assessment in Egypt. Between November 2017 and February 2018, the two institutions collaborated on a pilot survey on innovation in 1 000 micro, small, and medium enterprises in greater Cairo. All these enterprises are part of the formal sector operating in the fields of food products and beverages, leather products, and textiles and wearing apparel industries. Analysis of results is currently underway. These results will serve to inform further fieldwork under the theme of Metrics, Laws and Policies, to be undertaken in other countries in Africa. They also help contribute to the Index of Innovation Activity (IIA) that we are developing for Africa.

In addition to the involvement in Open AIR, A2K4D is also a member of several other research networks, exploring developmental topics in the Middle East and North Africa (MENA) region. The centre's research on knowledge, technology, data, and development, has expanded to include open data, artificial intelligence (AI), and development in the Global South. In November 2017, our Director, Nagla Rizk, gave a keynote at the AI and Inclusion Symposium in Rio de Janeiro, hosted by the Institute for Technology and Society on behalf of the Network of Internet and Society Centers. A2K4D is a participant in the interdisciplinary Global Network of Internet and Society Research Centers (NoC). Championed by Harvard University's

Berkman Klein Center for Internet and Society, NoC is a collaborative initiative among academic institutions with focus on interdisciplinary research on the development, social impact, policy implications, and legal issues concerning the internet. Rizk also participated as a panelist at the Artificial Intelligence for Good Summit in Geneva in May 2018.

Further, since 2015, A2K4D has been the lead institute in a research project titled, "Harnessing the Economic Power of Data in the MENA Region" (Data Revolution). A2K4D has been acting as a nucleus for a Middle East and North Africa network on Data for Development, in partnership with the Center for Continuing Education, Birzeit University in Palestine, and the ICT4D Laboratory, Al Akhawayn University in Ifrane, Morocco. This year, A2K4D launched a Solar Data Platform, an open database for solar sector data in Egypt. As well, A2K4D was selected to be the Open Data for Development (OD4D) node for the MENA region. The OD4D programme is a global network that looks to scale innovation, strengthen initiatives, and facilitate coordination between different actors and projects working in open data. The OD4D network was created in partnership between Global Affairs Canada, The World Bank, UKAid, and the International Development Research Centre (IDRC), and supports several nodes around the world. The creation of a MENA node is essential to building a strategic and comprehensive open data network in the region. As part of the OD4D node, A2K4D Director, Nagla Rizk is coordinating the current cycle of the Open Data Barometer (ODB), 2018, in North Africa. Research is being undertaken in Algeria, Egypt, Morocco, Tunisia, and Somalia. Our work with the ODB has focused on adapting open data measurement indicators to better capture open data practices in Africa.

A2K4D is also currently engaged in research on gender in the sharing economy, focusing on female drivers' experience with ride-sharing in Egypt, as part of the Urban Transport in the Sharing Economy Era Project. The project builds on Rizk's earlier research on Uber drivers in Egypt, which was published in the paper "A Glimpse into the Sharing Economy: An Analysis of Uber Driver-Partners in Egypt". This paper offers a glimpse into the driver side of the ride-sharing model in Egypt, provided through the eyes of the driver-partners themselves.

Finally, together with Internet Masr and the local chapter of the Internet Corporation for Assigned Names and Numbers (ICANN), A2K4D is leading an initiative around the topic of Internet Governance: Egypt Dialogue on Internet Governance. The objective of this initiative is to contribute to the development of the internet ecosystem in Egypt by creating a national platform for open and inclusive dialogue on internet governance issues to encourage collaboration and exchange of knowledge across all relevant stakeholders.



The University of Cape Town

The Intellectual Property Unit at the University of Cape Town (UCT) is both an administrative and research hub for Open AIR. Under the leadership of Programme Manager Nan Warner, significant time and resources are spent on managing and growing the network, organising numerous Open AIR network-wide events, and supporting all Open AIR network members in their work as outlined in this report. This includes the time-consuming and important tasks of monitoring and evaluation, financial management, as well as concluding and managing contracts, and ensuring that ethical clearance is obtained for all our case studies that involve human subjects.

Strategically, the last year has seen the implementation of the IP Unit's new vision and mission, as developed in 2017. The IP Unit's new vision is to be a



One example for policy influence in this area is the country's new IP Policy, approved by Cabinet in May 2018, which makes repeated reference to an IP Unit report that was co-authored by Nobel Prize winner Joseph Stiglitz in 2017.

leading voice in realising a continent where there is an open exchange about African ideas, creativity and innovation, in pursuit of sustainable development. Open AIR's work not only aligns with that vision and mission statement but has indeed helped in shaping it. Drawing from the experience of Open AIR in this area, these strategic efforts were accompanied by a much-improved social media presence – the IP Unit now tweets frequently under @AfricanIP – and a dramatic increase in substantive blog posts on the IP Unit website ip-unit.org. Very soon, several of these blog posts will be converted into and disseminated as IP Unit briefing notes on topical issues such as Human Rights, blockchain, AI and open and big data, looked at through the lens of IP. These briefs are set to complement some of Open AIR's research work.

The two UCT academic staff members working on Open AIR, Prof. Caroline Ncube – South Africa's newly appointed DST/NRF SARCHI research chair for IP, Innovation and Development – and IP Unit Director Dr. Tobias Schonwetter, serve on Open AIR's Steering Committee, lead one of the case studies (entitled "3D Printing: Enabler of Social Entrepreneurship"), and play a key role in mentoring Open AIR's NERGs. Both Prof. Ncube and Dr. Schonwetter have co-authored some of the working papers distributed by the network, and they have published numerous articles and book chapters on issues directly or indirectly linked to Open AIR's work; such as Prof. Ncube's book *Indigenous Knowledge & Intellectual Property* and Dr. Schonwetter's 2016 journal article "Conceptualising Knowledge Governance for Development" as well as his recently published book chapter, "Intellectual Property Rights and Access to Energy Services in Africa: Implications for Development", co-authored with two colleagues from our West African hub at NIALS, Prof. Adebambo Adewopo and Helen Chuma-Okoro. Both Prof. Ncube and Dr. Schonwetter have also been invited to speak at numerous conferences and workshops in the last 12 months, often in connection with their involvement in Open AIR. Linked to and supporting their involvement in Open AIR is Prof. Ncube's and Dr. Schonwetter's participation in numerous other networks and research projects, such as the CopyrightX MOOC initiative, together with other Open AIR hubs, and the African Scholars for Knowledge Justice (ASK Justice) project, which seeks to contribute to positive policy change to increase access to medicines, and access to knowledge in Southern and East Africa through strengthening the interface between IP and human rights. In addition, both Prof. Ncube and Dr. Schonwetter provide advice to government and other stakeholders, based on their research experiences from Open AIR and other projects, on law and policy reform, e.g. in the context of South Africa's new IP Policy or the discussions concerning revised copyright legislation in South Africa and Kenya. Furthermore, they are involved in topical and ground-breaking initiatives on Open Data, Open Science and Open Access. One case in point is Dr. Schonwetter's involvement, together with other members of the IP Unit, including Eve Gray and former IP Unit Director Prof. Julian Kinderlerer, in the government-driven EU-SA Open Science initiative. Notably, leaders of that initiative made specific reference to Open AIR's research findings when framing the discussion on South African innovation dynamics at a workshop in November 2017.

Open AIR's project management team and academic faculty at UCT are supported by a growing number of PhD, masters and bachelor students that the IP Unit employs under Open AIR's NERG programme. These NERGs have become very involved over time and now play a crucial role in many aspects of the IP Unit's Open AIR work, including the finalisation of case studies, dissemination of preliminary research results, and especially in terms of promoting Open AIR's various social media tools. One of Open AIR's UCT-based NERGs, Desmond Oriakhogba, was during this reporting period awarded a

prestigious QES Fellowship and recently relocated to our hub at the University of Ottawa to commence his research work under the Fellowship.

Through its work in the field, and especially as a result of its involvement in Open AIR, the IP Unit is now seen as a credible source for research-based evidence when it comes to law and policymaking in the area of intellectual property and innovation policy. The IP Unit seeks to disseminate Open AIR and other research findings through, e.g. integrating findings into curricula and organising or co-hosting regular workshops and outreach events, such as the Department of Trade and Industry's Innovation and Intellectual Property in South Africa workshop at the University of the Witwatersrand (WITS) in May 2018. Notably, other research project's, such as the IDRC's Africa Digital Policy Project, and the Digital Open Textbooks for Development, now seek out the IP Unit's expertise at the nexus of IP and innovation. Going forward, the IP Unit aims to broaden its current work by spearheading a law-tech lab initiative at the University of Cape Town.

Finally, we are pleased to report that during the reporting period, two Open AIR Steering Committee members, Professors Oguamanam and de Beer, have joined the IP Unit as senior research associates.



The University of Ottawa

The hub at the University of Ottawa (uOttawa) has undergone a number of changes this year. For one, we became more closely affiliated with the Centre for Law, Technology and Society (CLTS), moving into a brand new joint lab. For another, we have new funding and are conducting research into new areas within Open AIR's themes. We are also currently undergoing a change in staffing and duties to accommodate our growth and new relationships.

One of our major achievements this year has been garnering additional funding for Open AIR NERG Fellows. Through uOttawa, we were awarded the prestigious Canadian Queen Elizabeth II Diamond Jubilee Scholarships – Advanced Scholars (QES-AS) Program. This funding must be used for PhD students, postdoctoral candidates, and early career researchers, in order to facilitate movement between Canada and lower and middle income countries (LMIC), as well as between LMICs. We garnered this funding specifically for Open AIR NERGs in order to enable interhub studies involving gender and to further cement hub collaborative studies. At present, four awards have been granted, and several more will be granted in the next two years. For more information, please see page 36.

The uOttawa hub is also proud to be part of a joint, collaborative, research space under the auspices of the CLTS. This brand new lab was opened in February 2018 and houses not only Open AIR's hub but also the eQuality Project, CLTS researchers, and several leading scholars. By having a joint space, our researchers, especially NERGs, have been able to collaborate with new networks and catalyse new avenues of research. Such a congenial space of other research-focused, toptier scholars has already proved its worth for Open AIR researchers and has given a space for our QE Scholars to take further advantage of their time at uOttawa.

Over the past 12 months, the uOttawa hub has continued to attract exceptional students to be part of the NERG. During the school year, we had 15 students (13 Juris Doctors and two PhDs), and this past summer, we had 11 students (nine Juris Doctors and two PhDs), as well as two visiting QE Scholars. Our NERGs have conducted research on topics ranging from innovation among refugees, to Nollywood, to gender, and IP. Further, uOttawa students

have had the opportunity to travel and attend events around the world. We see this as important both in terms of helping them learn more about the network as well as to increase their own professional networks and CVs. Such trips included, Alyssa Gaffen traveling to New Zealand for the ATRIP conference; Uchenna Ugwu attending the Copyright User Rights and Access to Justice Symposium in Windsor; Vipal Jain going to Kumasi for the Africa Open Science and Hardware (AfricaOSH) Summit; Nicole Tumaine attending the Africa Innovation Summit in Kigali; Sileshi Hirko, Uchenna Ugwu, and Abdelhamid Benhmade joining us for the Accra Open AIR workshop; Helen Chuma-Okoro attending to the RightsCon in Toronto; and more.



Of particular note, the 2017 Ontario Makers and Mentors Innovation Conference (OMMIC) opened with a gala panel showcasing several Open AIR NERGs. This event gave our NERGs an opportunity to actively suggest a panel to OMMIC and then implement it almost entirely on their own. This included bringing NERG Fellow Nagham El Houssamy from Open AIR's Cairo hub at AUC! In addition, NERG Fellow Uchenna Ugwu had the opportunity this past year to travel to South Africa for the Thabo Mbeki Foundation and the University of Pretoria Centre for Human Rights' conference on Regional Perspectives on the Right to Development. There, she presented her paper entitled, "Maximizing the Differentiation Principle in Regional IP and Trade Agreements to Advance Food Security for the Realisation of the Right to Development in West Africa". As part of this trip, Uchenna also took the opportunity to visit Open AIR's hubs at Tshwane University of Technology and UCT, meeting several members of the Open AIR network. Students at the uOttawa hub also spoke at a number of other conferences, wrote blogs for the Open AIR website, and were co-authors on a number of publications, both on Open AIR-related topics and others (all listed in Appendix A). We see these opportunities as crucial for the development of our NERGs. They are not only skills development and networking opportunities, but also ways that our NERGs can see their research having real impacts.



This past year we also hosted the Open AIR Steering Committee and several NERGs for a writing retreat in Montebello. Such face-to-face meetings are invaluable to the network and allow us to not only determine where we want to go with the network in the years to come, but also allow us to plan much of the strategy for Open AIR's knowledge mobilisation, publications, upcoming research, and so on. On the margins of this writing retreat, the NERGs also had a meeting where they were able to brainstorm collaborative research projects, as well as determine a parallel strategy to Open AIR's publications, upcoming research, and more.

This year, Chidi Oguamanam was exceptionally active for the Open AIR network. He spent significant time traveling to Nigeria, building networks, cementing already existing partnerships, and presenting Open AIR's research at a number of high level fora. In addition, Oguamanam spent significant time in Geneva as part of the WIPO IGC negotiations. He made a number of high-level interventions, resulting in real policy change. Several blog posts were written by Oguamanam, and his work was featured in the influential global specialist publication, *IP Watch*. Oguamanam was also interviewed in *FLORA IP*, a Nigerian food, agriculture, and intellectual property online resource. His joint role with Access and Benefit Sharing (ABS) Canada has also significantly contributed to Open AIR's ability to correlate the research theme of traditional knowledge (TK) with indigenous Canadians, and indigenous peoples elsewhere in the world. Moreover, in September 2017, Oguamanam spoke at The Walrus Talks Africa's Next Generation event. This event was at the Aga Khan building, right next to Global Affairs Canada, and gave Open AIR significant attention among a diverse

and influential group of people in Ottawa.

Jeremy de Beer has also been active in broadening the network through his joint research with the Global Institute for Food Security's Plant Phenotyping and Imaging Research Centre (P²IRC). This research has resulted in presentations that have given Open AIR more attention on the world stage. For example, in February, de Beer presented at the Global Forum on Agricultural Research (GFAR) and the UN Food and Agriculture Organisation (FAO) Symposium on Farmers' Access to Data, in South Africa. He was also the keynote speaker in November in the International Symposium on Farmer's Access to Data. Through his research, de Beer has been pioneering exploratory research at the intersection of open data, digital agriculture, food security, and African innovation.

Further, Victoria Schorr has continued to strengthen Open AIR's contacts with the diplomatic community, both in Canada and abroad. She was also instrumental in forging close ties with Carleton University's new Sprott Centre for African Research and Business (SCARAB), having spoken at SCARAB's official launch event about the lessons learned from Open AIR. This event helped Open AIR to become more closely connected with the Global Economic Institute (GEI), which has since resulted in a number of high-profile speaking events by Open AIR researchers on the African continent.

This year has also been marked by a number of significant publications. In 2018, Oguamanam's article, *Wandering footloose: Traditional knowledge and the "Public Domain" revisited*, was published in the *Journal of World Intellectual Property*. In June, a joint article by de Beer, Kraemer-Mbula, Armstrong, and one of our NERGs, Meika Ellis, about makerspaces in South Africa was published in the *Journal of Peer Production*. These are just some of the publications the uOttawa hub has put out this year, contributing to the already large number of important publications resulting from our work with Open AIR. In addition, a forthcoming book chapter by de Beer and Oguamanam about Open AIR will be published in *Intellectual Property: Public Private Partnership and UN Sustainable Development Goals*, a book being led by researchers affiliated with Open AIR's global engagement partner, the International Centre for Trade and Sustainable Development.

Finally, the uOttawa hub has continued to have an annual Distinguished Speaker event, and has been active both in Ottawa and around the world. In October 2017, Prof. Dalindyebo Shabalala spoke as our annual Distinguished Speaker. His presentation focused on the extent to which Native American nations in the US have been engaged in claiming and protecting their indigenous knowledge in terms of IP. He then related this to South Africa and the work that Open AIR is doing, both on the African continent and in Canada. A unique goal of the uOttawa hub, is our focus on bringing lessons about innovation from Africa to Canada. As findings from Open AIR's African-based research are now being published, this new year's speaking events will focus on showing African examples that Canada can learn from and, by extension, the rest of the "developed" world. Already there is one planned for the end of September by Kraemer-Mbula, one by Desmond Oriakhogba in October, and one by Oguamanam in October, each of which are about Open AIR's research, with ideas for Canada.



**Strathmore
University**
Law School

Strathmore University

Over the past year, CIPIT has continued to be a leader on IP issues in Kenya and to achieve its many objectives for Open AIR. These objectives include not only research, but also knowledge mobilisation, policy, influence, mentoring, networking, and more. For example, as a result of last year's Open AIR workshop on makerspaces and our ongoing research, Strathmore University is in the process of creating a makerspace that will put into practice the various items we have learned regarding the optimal set-up of community innovation hubs. In addition, in 2017, our blog was ranked in the list of Top 100 Intellectual Property Blogs. Currently we have 1 700 followers on Twitter and 1 610 likes on Facebook. Through our blog, we have produced 392 posts which have received 1 127 913 visits from 146 981 unique visitors! This has allowed us to have a significant reach both within and outside of Kenya.

In terms of our research, this past year was a substantial one. In 2017, we completed the research and writing of our case study report, entitled, "Open Collaborative Models of Mobile Tech Innovation in Kenya". We also completed a mapping of mobile technology start-ups in Kenya, which we are in the process of publishing as a working paper. In addition, CIPIT was involved in supporting and supervising four other case studies by Open AIR researchers under the high technology hubs thematic area. CIPIT had work published in several US and peer-reviewed journals this past year, specifically the *South African Intellectual Property Law Journal*; *NYU Journal of Intellectual Property and Entertainment Law*; *Journal of Intellectual Property Law and Practice*; *Harvard African Policy Journal*; and *Jahazi*.

CIPIT has taken an active role in the NERG. In May 2017, we were honoured that CIPIT Research Fellow Victor Nzomo was named the new ombudsperson of the NERG. In this capacity, he represented all the NERG Fellows on the Steering Committee and helped guide and support other NERGs. During his tenure, there were increasing NERG interactions and joint research. For example, Jeremiah Baarbé, an Open AIR NERG Fellow from the Ottawa hub, came to visit for several weeks. The purpose of his visit was to collaborate on a new study into makerspaces in Kenya. During his visit, we visited and/or interviewed various FabLabs and makerspaces in Nairobi, Kisumu, and Mombasa. Similarly, in October 2017, Victor Nzomo spent three weeks at Open AIR's North Africa hub, A2K4D, in Cairo. During this study visit, he presented at the seventh A2K4D annual workshop on the findings of our ongoing research into makerspaces in Kenya. In addition, he had the opportunity to attend a conference co-organised by Hivos and AfriLabs entitled, "Future of African Cities: Innovation, Spaces and Collaboration". And finally he visited and interacted with various makerspaces and FabLabs in both Cairo and Alexandria.

CIPIT also hosted three NERG researchers in 2017 and 2018, namely Victor Nzomo, Louisa MatuMureithi, and Jacqueline Mwangi. These NERGs are PhD and masters students who carried out research on high technology hubs as well as mobile technology innovation in Kenya. In 2018, Wanjiku Karanja joined CIPIT's Open AIR team as part of NERG. Through learning-by-doing, NERGs at CIPIT are actively involved in research methodology, research design, data collection, and the drafting and presentation of research findings. As a result, NERGs at CIPIT have participated in a number of events including workshops and conferences such as the iAfrikan Annual Tech Roundup and the CopyrightX: GoDown course. Further, NERGs have been preparing blog posts to disseminate key research findings, as well as being co-authoring other works.



A number of events were held in 2017 in Kenya that involved substantive participation by CIPIT. Three examples are: the National IP Policy Stakeholder Workshop, where Victor Nzomo and Isaac Rutenberg presented to various government and non-government stakeholders; the Science Cafe on IP Rights in Kenya, where Isaac Rutenberg presented to a lay audience of inventors and creatives; and the World Intellectual Property Day event at the National Museum of Kenya, where Isaac Rutenberg joined the Kenya Copyright Board in marking this worldwide event.

Ongoing projects at CIPIT include the preparation of two forthcoming books: *Intellectual Property Law and Practice in Kenya*; and *Cyber Law in Kenya*. Both books are to be published by Kluwer Publishing in 2018 or 2019.



University of Johannesburg

The University of Johannesburg (UJ) is Open AIR's newest hub. It was previously located at the Institute for Economic Research on Innovation (IERI) at Tshwane University of Technology. In February 2017, Steering Committee member, Erika Kraemer-Mbula, accepted a post as Associate Professor at the University of Johannesburg (UJ), while still continuing to be affiliated with IERI and the DST-NRF Centre of Excellence in Scientometrics and Science, Technology and Innovation Policy, both in South Africa. In this capacity, Erika is able to continue our groundbreaking research into innovation in the informal sector, draw on multiple knowledge centres, and grow her network.

The fiscal year 2017–2018 was dedicated to building the capacity of new researchers and students at our new research unit at UJ. In this post, we are able to support a larger set of students, including students enrolled in their Honours Degrees, Masters, MPhils, and PhDs. We are highly committed to supervising black (preferably female, and preferable low-income) South Africans, and the majority of postgraduate students that we currently supervise fit this profile. Moreover, the two students supported with Open AIR bursaries at IERI who are still under Kraemer-Mbula's supervision, Sigfried Tivana and Outlwile Philip Maselwanyane, submitted their dissertations in early 2018 and will graduate in September 2018. They are both interested in pursuing a PhD in Open AIR thematic areas.

At UJ our main goal this year has been to build a local community of innovation scholars that can develop locally-relevant research that feeds into policy processes. South Africa still does not have a critical mass of innovation scholars, especially working in areas related to informal sector innovation, knowledge governance, and innovation for inclusive development. For this reason, most of our internal efforts have been directed towards nurturing and developing the skills of our NERGs. Open AIR funding has enabled us to expose our NERGs to international events, where they can gain experience, present their work, and learn from established international scholars. In this respect, three of our PhD students, Godfrey Mashamba, Theophilis Meintjes, and Nepeti Nicanor, presented their work in April in Norway, at an event focused on the Economics of Innovation. Also in April 2018, Outlwile Maselwanyane presented his Masters thesis on Innovation and the Maker Movement in South Africa, at the African Open Science and Hardware (AfricaOSH) Summit in Ghana.

The UJ hub was a key player in the organisation of the second African Innovation Summit (AIS) in Kigali in 2018, with Kraemer-Mbula as the chair of the Scientific Committee and member of the Organisation Committee, and Oluseye Jegede as a member of the Scientific Committee. Open AIR was a listed partner of the AIS II and was represented by several members of the network. Open AIR had a dedicated panel to discuss IP and African innovation,



with participation by WIPO.

Kraemer-Mbula has been an active contributor to high level discussions on innovation policy in Africa, especially in connection to sustainable and inclusive development; for instance in November 2017 she participated in an experts' workshop held by UNCTAD on Rethinking the Role of Science, Technology and Innovation (STI) Policy for SDGs and for Inclusive and Sustainable Growth; and in June 2018 she was a panelist on the STI for Sustainable Consumption and Production Patterns (SDG 12) at the Science, Technology and Innovation Forum at the UN headquarters in New York.

In 2017 she was elected member of the Scientific Board, and vice-president of Globelics, and continues to be a member of the Africalics Scientific Board. In these roles, she contributes to these networks' activities, guidance and decision-making. In this respect, in June 2017, she lectured at the fifth Africalics PhD Academy, presented a paper and contributed to several panels at the Globelics Conference in Athens, in October 2017, and also at the third Africalics Conference in Oran, Algeria in November 2017. During this period she has also delivered several keynote addresses, such as at the International Conference of Frugal Innovation, Leiden University, Netherlands in November 2017; at the SARIMA Conference in Johannesburg in May 2018; and at the NRF CoE's Directors Forum in August 2018.

Other contributions, seminars, and papers presented in conferences, include: a seminar on Africa and Sustainable Development: Reflections on Innovation and Learning Systems, for the Commonwealth of Learning in Vancouver; a panel on enhancing Africa's inventive capacity and competitiveness to respond to SDGs, at the African Unity for Renaissance Conference, in Pretoria, South Africa; a presentation on the informal basis of hubs of entrepreneurship and innovation in Africa, at a conference on innovative informality, in London, UK; and a plenary presentation on innovation and tech hubs in Africa, at the African Economic Research Consortium (AERC) Biannual Workshop, in Mauritius, presented in collaboration with the leader of Open AIR's Nairobi hub.

The UJ hub's research for this year has followed three parallel streams largely connected to Open AIR thematic priorities:

1. We have continued our work related to innovation and the maker movement, with an emphasis on exploring its impact on socio-economic inclusion. In this respect, Chris Armstrong and Kraemer-Mbula conducted a research project in South Africa in early 2018, building on, and expanding our earlier research (Kraemer-Mbula and Armstrong, 2017). Some of this work was presented at the AfricaOSH Summit in Ghana in April 2018.
2. Our research agenda has been largely shaped by our newly granted community of practice in "Innovation and Inclusive Industrialisation". This grant was awarded in 2017, is hosted by our Unit at UJ, and funded by the National Research Foundation (NRF) of South Africa. Open AIR is an active partner of this community of practice and its engagement is both at the thematic level, as well as actively through the postdoc mobility programme (under QES), and through visiting researchers from the network to our Unit, among other activities. The community of practice's work is at the intersection between innovation and structural transformation in South Africa and beyond. Some of the research focuses on: (a) innovation in micro enterprises as a route for inclusive industrialisation; (b) technological innovation in labour-absorbing industries and their impact on employment; and (c) fourth industrial revolution technologies and their prospects for inclusion and employment. Oluseye Jegede has joined the community of



practice as a senior researcher. The community of practice has become a growing and dynamic group of researchers, specialised in innovation and inclusion, with a strong focus on mentorship and capacity building. In this respect, it provides bursaries to students doing their Masters, and also engages PhD students, postdocs and emerging scholars in conducting our research activities.

Elvis Avenyo from Ghana, joined the UJ hub in June 2018, obtaining a joint bursary from QES and UJ Global Excellence and Stature Postdoctoral Fellowship, after receiving his PhD at the United Nations University – Maastricht Economic and Social Research Institute on Innovation and Technology (UNUMERIT), Netherlands. In his postdoc, he is working on the theme, “Innovation and the performance of informal SMEs in Ghana: A gender perspective”. He has also been selected NERG ombudsman.

3. We have continued to explore the concept of “research excellence” in the context of Africa. In this respect, UJ hosted a workshop supported by IDRC and the Science Granting Councils initiative (SGCI), to discuss the concept and applicability of research excellence in the context of developing countries. Given the interest that supporting research excellence has attracted in Africa, this project provides a platform to discuss whether research excellence does or can help address broader social and economic objectives.

In August 2017, Kraemer-Mbula visited the University of Ottawa in order to plan our strategic approach for the next few years, expand the ongoing collaboration on maker movement research between researchers at the University of Ottawa and South Africa, as well as engage with NERGs in Canada. This event was extremely beneficial for network-building and a valuable route to exchange experiences across regions. She will return to Ottawa in September 2018, where she will deliver a lecture on “Modalities of Innovation Hubs and Innovation Entrepreneurs in Africa”, and attend the Networked Economies’ Partners Meeting at IDRC.



**Nigerian Institute of
Advanced Legal Studies**

Nigerian Institute for Advanced Legal Studies

The Nigerian Institute of Advanced Legal Studies (NIALS) is Open AIR’s only hub that is not a university. Nevertheless, it is one of the top research institutions in Nigeria, with a mandate that exactly aligns with Open AIR. Further, NIALS is seen as a neutral and powerful influencer in Nigeria, thereby allowing Open AIR to have maximum reach within Nigeria and regionally. Over the past year, the relationship with NIALS has been steadily progressing and Open AIR has been partnering with our researchers on various levels.

As mentioned in the 2016 report, there were difficulties with the transferring of funds to Nigeria, due to Nigerian budgetary legislation. As a result of the delay, Open AIR researchers in NIALS had to seek alternative funding to proceed with their research. After discussions with NIALS, SSHRC, IDRC, and Canadian diplomatic officials to determine the best way to facilitate the transferring of funds, we found workable solutions. NIALS’ status as a parastatal – though not responsible to the government in any way – has made the situation difficult, but last year solutions were found and research and related activities were able to continue apace.

This year, NIALS completed its study entitled, “Open versus Proprietary Models: A Study on the Use of Software by Software Developers in Local Software Hubs in Nigeria”. This study falls under the high tech hubs theme and looks at the growing class of tech savvy entrepreneurs operating in and contributing to the growth of the informal economy through their innovations.

By its nature, software remains the key component of operationalising activities in the area of technological innovation. This study looks at how entrepreneurs are pursuing their goals and objectives with or without licenses and how the current intellectual property system in Nigeria has affected the activities of these hubs in terms of innovation, scalability, and entrepreneurship. An Open AIR working paper on the results of this study is currently under review and will be published later this year.

NIALS has sustained interest in the development of appropriate legal and policy frameworks for the protection and promotion of traditional knowledge (TK). As such, although Helen Chuma-Okoro's research on Traditional Knowledge and Indigenous Entrepreneurship was suspended, there are plans to revive the study as soon as adequate funding is secured. We are interested in how traditional medicinal knowledge serves as the basis for entrepreneurial endeavours, and how this can encourage economic development through scaling up under an effective knowledge management system. This past year, Chidi Oguamanam also travelled to Nigeria several times in order to conduct his case study research into Nollywood. Nollywood is at the intersection of several Open AIR research themes, such as the themes related to traditional knowledge, the informal sector, and high tech hubs.



Oguamanam's time in Nigeria proved to be fortuitous. Not only did it help to strengthen the linkages between NIALS and Open AIR, he also had the opportunity to present and meet with high-level stakeholders and influencers in Nigeria. In November 2017, Oguamanam presented his research at the Annual Global Economic Institute for Africa (GEIA) Summit in Lagos, on "Innovation and Entrepreneurship: The Nollywood Growth Channel". This presentation identified new growth channels for Africa based on cross-border investment partnerships through start-ups and small businesses. He showed Nollywood as a case study for how technological opportunism has resulted in an entertainment and cultural ecosystem in Africa, with global reach. This happened through a process involving an interweaving of formal and informal entrepreneurs that has resulted in the entertainment sector being one of the top three highest employers in Nigeria. At this event, Open AIR received robust and extremely generous publicity. Indeed, this showcasing of Open AIR's research enabled Oguamanam to attend a meeting of Nigerian Canadians hosted by The Global Economic Institute, the Canadian High Commission in Nigeria, and the Nigeria-Canada Chamber of Commerce. This meeting was held in Lagos with the High Commissioner from Abuja and his Lagos-based deputy in attendance. At this meeting, Oguamanam had the opportunity of introducing Open AIR to Canadian diplomats and sharing our publications. In addition, Oguamanam had the opportunity to attend the Nigeria-Canada Chamber of Commerce meeting and dinner, which provided a platform for him to meet a range of private sector actors and share Open AIR's work.

One of the major outcomes of this year has been our growing relationship, and pursuant event at, Lagos State University (LASU). Through NIALS and Open AIR's relationship with the former Director General of NIALS, Epiphany Azinge (Senior Advocate of Nigeria – SAN) and Professor Lanre Olarenwaju Fagbohun (SAN), the Vice Chancellor of LASU, this past year Open AIR and NIALS, spearheaded by Chidi Oguamanam, have built an extremely close relationship with LASU. This culminated in our jointly holding a workshop with LASU, the National Workshop for Research Grant Writing and Administration, from 13 to 14 February, 2018. This workshop was a partnership of LASU, NIALS, Open AIR, and the National Universities Commission of Nigeria. Its aim was to engage in capacity building and capacity development of local academics to attract research grants and, through sharing information with international and national resource persons on research grant writing, to build academic

networks and university administrative support for grant management. For more information on the workshop, see page 45.

NIALS has also continued to nurture our staff toward becoming excellent scholars. This past year, NERG Fellow Helen Chuma-Okoro has been completing her PhD at Open AIR's South African hub at UCT, under the supervision of Professor Caroline Ncube and Dr. Tobias Schonwetter, with support from both NIALS and Open AIR. She was also awarded the QES grant, which enabled her to conduct research at the University of Ottawa from 1 April to 31 July, 2018. During the period of her stay in Canada, Helen attended the 2018 Creative Commons Global Summit and the 2018 RightsCon Conference in Toronto. She was also Visiting Research Fellow at the Nathanson Centre on Transnational Human Rights, Crime and Security at York University in June 2018. Further, Helen has worked on a number of articles for publication including in the *African Journal of Information and Communication (AJIC)*. As well, through her participation in Open AIR research, she has forged linkages with the tech sector in order to create an understanding of the role of IPRs among Nigeria "techies".

In addition, another emerging scholar at NIALS, Esther Ekong, has been granted admission to do a PhD at the University of Ottawa, with support from NIALS. Her thesis focuses on gender-related inequalities in IP law. Esther also won the NIALS 2018 essay competition on arbitration, which earned her funding to participate in the SOAS Arbitration in Africa Conference, held in Kigali, Rwanda, from 2 to 4 May, 2018. As well, her abstract for the 2018 Africa Innovation Summit was accepted, earning her further funding to participate in the event from 6 to 8 June, 2018. Currently, she is spearheading the collaboration with Shareable Cities in order to introduce the concept of Sharing Cities in Nigeria. Sharing Cities is a movement and concept that promotes sharing in communities across sectors in order to improve the livelihood of urban dwellers.

These are in addition to the award of the rank of Senior Advocate of Nigeria (SAN) to Adebambo Adewopo. The rank of SAN is conferred on Nigerian lawyers who have distinguished themselves in the legal profession as legal practitioners, and to members of academia who have contributed immensely to the development and practice of law. Not only did our hub leader Adewopo receive this award, but also NIALS' Director General, Adedeji Adegunkle. LASU Vice Chancellor, Professor Lanre Fagbohun, has been named as one of the recipients of this year's SAN award.

Finally, NIALS is continuing our collaboration with Creative Commons and other international networks. With Creative Commons, we have been promoting open access and open education resources in Nigeria as necessities for the education sector. Such awareness is currently very low and there are deeply rooted misconceptions about these initiatives. Toward this end, NIALS is spearheading the re-establishment of the Nigerian Creative Commons chapter in accordance with the reconstituted Creative Commons modalities. By this, we intend to maintain our leadership role of Creative Commons.



Refining our structure and activities going forward

From project to partnerships to a network

Since its inception, Open AIR has evolved from a development-oriented project to a multi-institutional network of dynamic partnerships. We have created capacity at five African hubs and evolved into one of Africa's most unique and credible voices on IP and innovation issues. Open AIR's evolution is a result of its studies across several economic sectors and areas of IP. Open AIR has continuously grown in breadth and depth. This, combined with continuous training of network members, has resulted in significantly increased capacity among researchers, including emerging African scholars who joined Open AIR as researchers and Fellows, as well as African policy and issue leaders, and African innovators, creators, and entrepreneurs.

In July 2015, when Open AIR's 2015 SSHRC Partnership Grant application was successful, the award of CAD 2.5 million over seven years from SSHRC, combined with almost CAD 1.5 million over three years from IDRC, has allowed us to shift from a project to a network – allowing for increased sustainability. Since then, we have created a decentralised structure to allocate increased responsibility to our hubs, resulting in their capacity development. Partners have a shared understanding and commitment to the project, its objectives, and its deliverables, as well as an understanding of how their membership in the network can enhance the work, goals, and sustainability of their respective institutions. We also created a new integrated timeline, taking into account the three-year period of Open AIR's IDRC grant and the seven-year period of the SSHRC Partnership Grant.

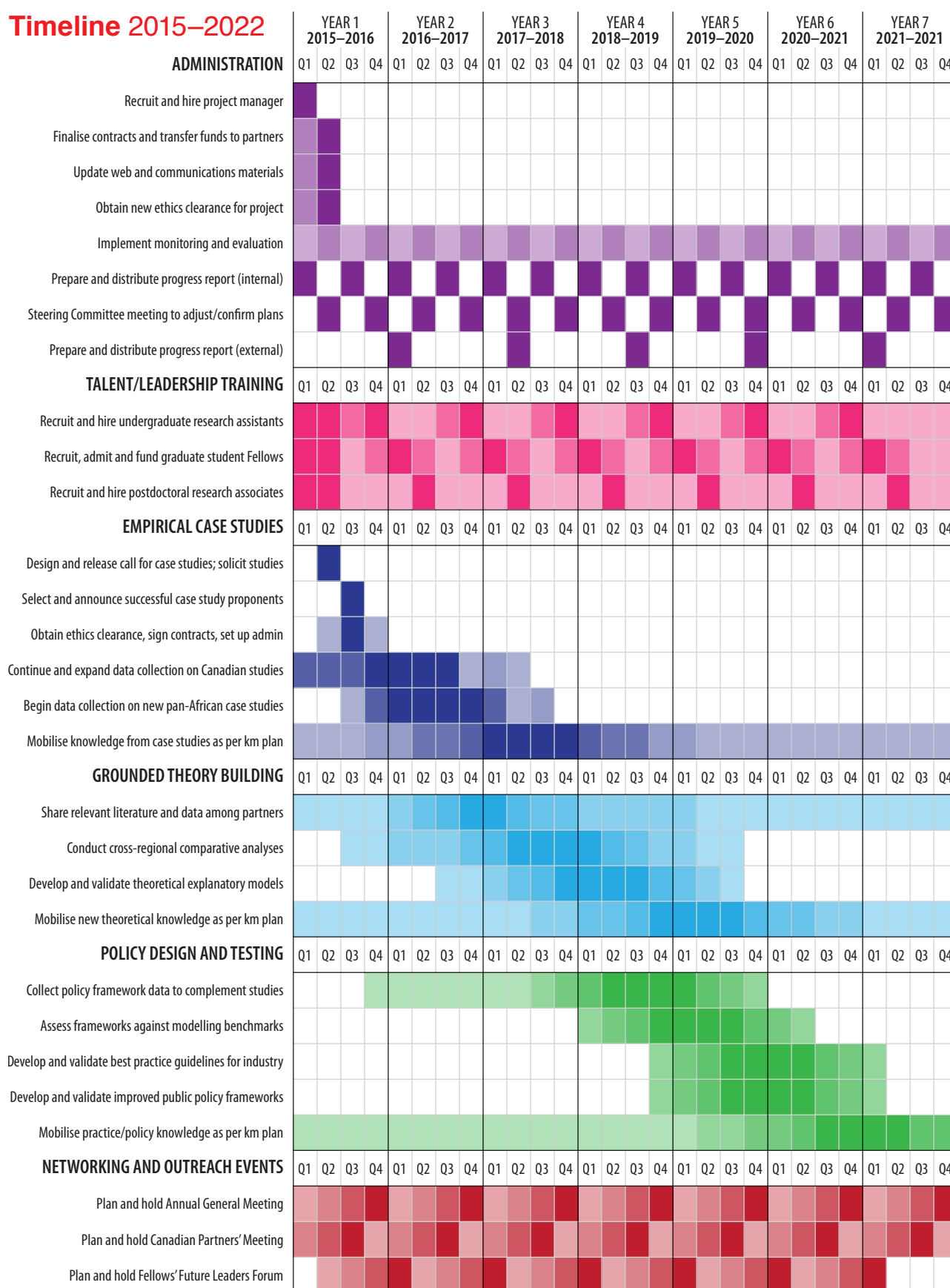
As part of our partnership's evolution, Open AIR was also able to bring three more world-class African-based researchers onto our Steering Committee: Prof. Caroline Ncube, Dr. Isaac Rutenberg, and Dr. Erika Kraemer-Mbula. We have also brought in 48 case study researchers, several of whom were entirely new to the network. These researchers have proved to be excellent additions to the network and keen to be even more active as our research progresses. These new researchers have produced blog posts as well as reports on their research, many of which are being turned into working papers as they are submitted. These researchers are also some of those highlighted in our videos, and have been participants at our Open AIR workshops in Kenya, South Africa, and Ghana.

The evolution of Open AIR from a development project to a multi-

institutional network of dynamic partnerships was reflected in the change of titles of our Project Managers to Programme Managers. One of these Programme Managers, Nan Warner, has now been with Open AIR for more than eight years. The consistency of her presence helps to ensure the corporate memory of the network, in addition to her proven capacity to manage a multitude of projects in an efficient, effective, and excellent manner. Thanks to SSHRC's co-funding, Open AIR was able to bring Victoria Schorr, our Ottawa Programme Manager, on board. Ms. Schorr is a specialist in African political economy and had previously been working with the Canadian federal government, notably Global Affairs Canada. Her contribution to Open AIR has been significant and her already-established contacts with different networks of people has increased Open AIR's capacity to mobilise our knowledge in new areas and with a broader network. With one Programme Manager in Cape Town and one in Ottawa, Open AIR has been better able to manage its increasingly complex network and broaden Open AIR's capacity as well as impact.



Timeline 2015–2022



Refining our structure and activities going forward

From the Open AIR Network Managers I have learnt:

- The role of Management is crucial
- Management and administration skills
- Project structure and attention to detail
- Sharing, communication, coordination, interpersonal skills, leadership, being proactive
- Internet-based tools (Slack & Airtable)

Administration and financial management

Open AIR is funded by IDRC and SSHRC, managing what is effectively three grants and working in roughly a dozen currencies. Our IDRC funding is administered from the University of Cape Town, and the American University in Cairo (both institutions received a grant from the IDRC). Our SSHRC Partnership Grant is administered by the University of Ottawa and in partnership with our hubs. SSHRC funding began in April 2015, with IDRC funding beginning July 2015.

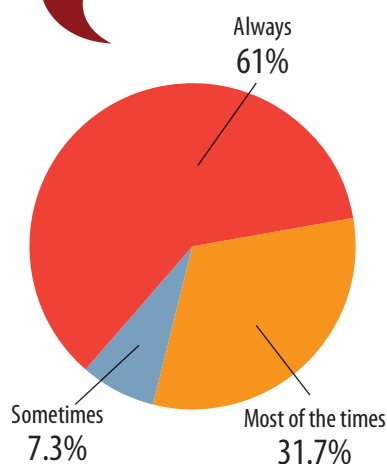
Open AIR's financial management and reporting protocols were agreed. Financial plans, statements, reports, and requests have been unified into an easily managed format, with enough flexibility to allow each hub to report in the manner preferred. This has allowed us to comply with the overlapping and differing criteria of our funders, IDRC, SSHRC, as well as the home institutions.

As Open AIR has grown both in size and outreach, human resource capacity has become an increasing concern. Several research arrangements have thus been formalised and temporary help has been found for the short-term. Nevertheless, this will be a challenge that will need to be mitigated going forward. Solutions are being sought at our home institutions and elsewhere for the longer-term. To assist Open AIR's two Programme Managers, Nan Warner in Cape Town and Victoria Schorr in Ottawa, Theresa Hume (and later Phyllis Webb), and Nicole Tumaine have made invaluable contributions during the past three years.

Contracts were finalised for all key people and the sub-granting process to all case study researchers, including contracts, were issued, based on ethical clearances. Currency fluctuations and exchange rate changes have made the managing of our funds more difficult, but all efforts are made to ensure that losses are minimal.

Open AIR has increasingly been using several online platforms for both internal communications across the network as well as for monitoring and evaluation. As described later in this report, Open AIR has used these creative new online tools to develop a database of our network members' participation in meetings, publications, and other outputs, as well as to provide updates on the progress of important outputs, such as working papers and blog posts. Ensuring that everyone knows what everyone else is doing was previously a significant challenge for Open AIR and has been noted as a challenge for many other research networks. We are pleased that these new tools, namely Slack, Whatsapp, and Airtable, have greatly enhanced our internal communications and tracking abilities.

Were the Open AIR Programme Managers easily accessible to resolve any management issues?



Network sustainability strategies

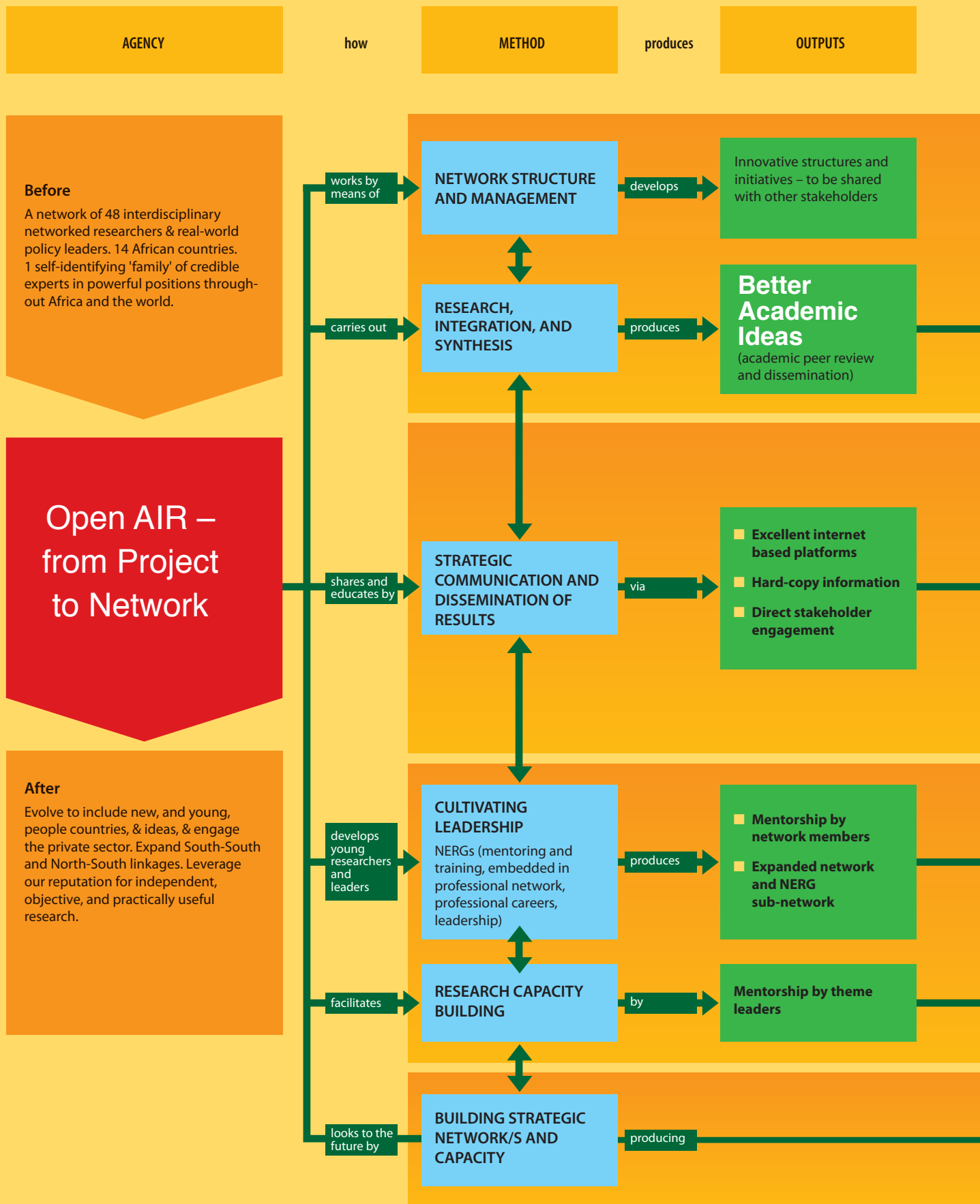
We believe that sustainability comes through the partnerships that we are pioneering, both with our hubs and our researchers outside of our hubs. This network ensures not only our sustainability, but also that our findings will have greater reach and impact. The establishment of these relationships reflects Open AIR's success in building a continent-wide epistemic IP community.

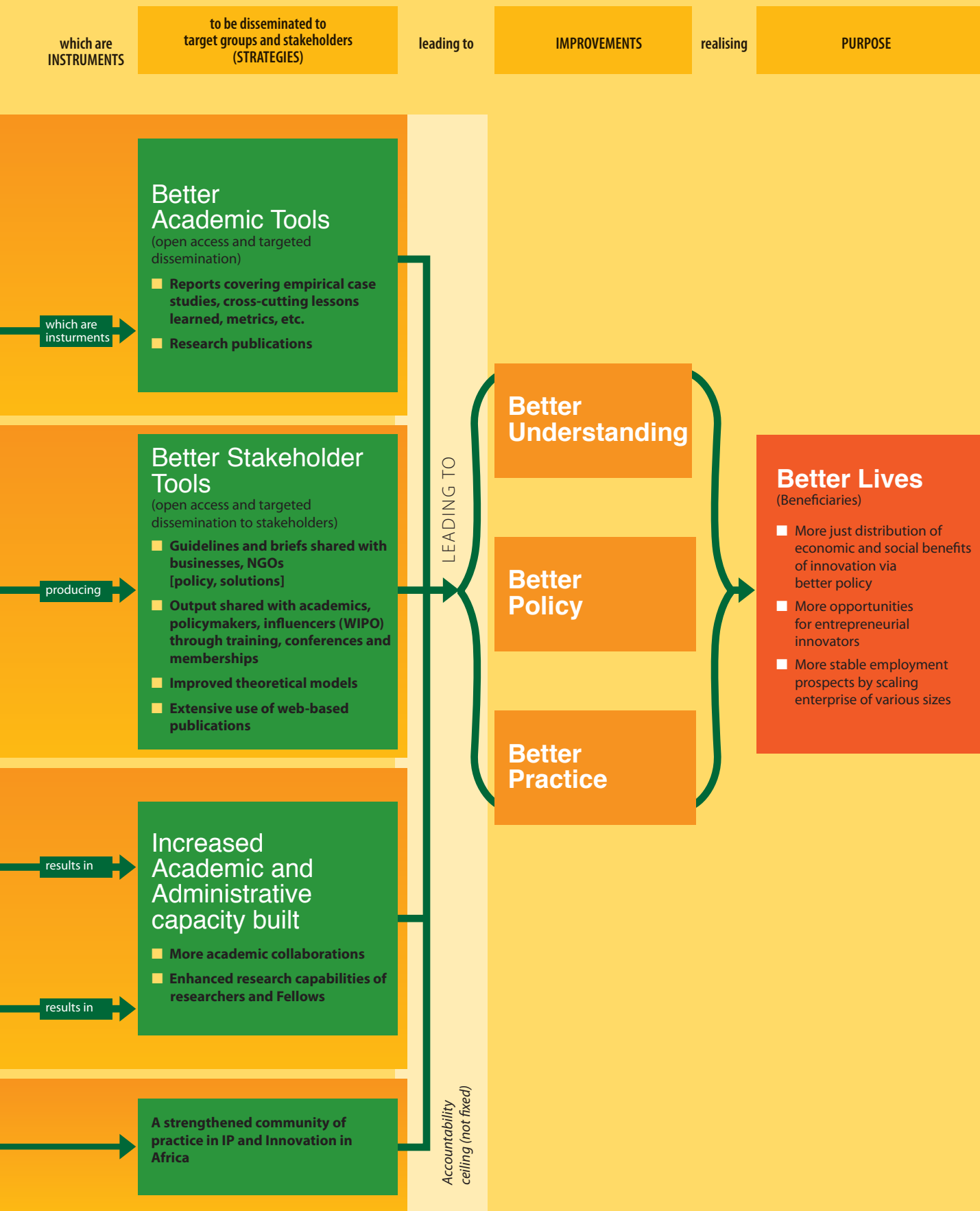
Moreover, this effort at relationship building relates to a key part of Open AIR's previous activities: to build capacity in our researchers. Such activities have already begun, and our hubs are helping to develop research and academic capacity in Africa; establish linkages to other African experts and researchers; assist with the publication and promotion of important research insights via a variety of platforms; and undertake outreach and training of key public and private partners.

In addition, in order to maximise the impact of our activities and ensure sustainability of our network we are leveraging (or plan to leverage) the following:

- **Case study contracts:** We are making an effort to sign contracts with institutions rather than individuals, in order to promote institutional identification and buy-in.
- **NERGs (New Emerging Researchers Group):** We are nurturing and investing in the next generation of experts, mainly from Africa, who will continue with this work even if Open AIR comes to an end; attracting and retaining proactive and effective alumni.
- **Multi-project/umbrella project approach:** We are exploring the possibility of several related projects carried out by each hub under the umbrella of Open AIR.
- **Parallel co-funding:** Open AIR continues to explore co-funding from other funders and timely conceptualisation of our next phase.
- **Network membership:** We recognise the benefits in increasing our network membership in terms of accessing resources, outreach, and leveraging credibility (see Appendix B).
- **Greater visibility:** We are expanding our impact and network to include other researchers not formally part of Open AIR, including NGOs, think tanks, and other institutions.







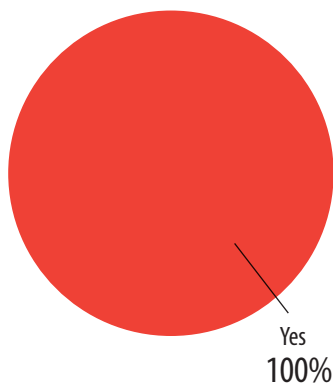
Evaluation and evolution

The Open AIR Theory of Change describes various complementary components working interactively to produce outputs. They comprise an innovative network structure; better academic ideas; communication and dissemination tools; cultivation of leadership; and a strengthened community of practice and innovation in Africa.

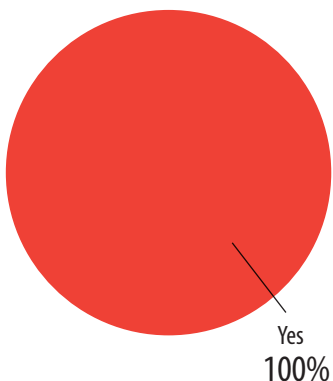
This phase of Open AIR has addressed all of these outputs but, as expected in a research environment that uses a model of continuous feedback, has encountered the need to address key, overarching issues flowing from our interim findings.

Moving forward, therefore, we will continue to improve our network structure, communication and dissemination tools, and cultivation of leadership. In terms of better academic ideas and a strengthened community of practice, we have developed new sub-questions to shed further light on our current findings. This will allow us to significantly improve our research outputs, increase our insight into the research environments, and create better academic tools and stakeholder tools.

**Has your institution/
research unit benefitted
through your involvement
as an Open AIR Hub?**



**Have you observed growth
in your researchers'
capacities that you could
realistically link to their
involvement in Open AIR?**



Results of our mid-term assessment

In anticipation of the midpoint of our partnership, and in order to elicit information about all aspects of the network as set out in the Theory of Change, an extensive Monitoring and Evaluation exercise was carried out with the assistance of an independent consultant. It was conducted during December 2017 and February 2018 by means of an online questionnaire, which was shared with the 50 most engaged individuals in the network. We received an 82% response rate; an extraordinarily high percentage.

The input we received was invaluable. It was used to frame our Transition Workshop discussions, and it offered insights into where we can improve, going forward.

All five hub leaders indicated that their institution/research unit has benefitted through their involvement as an Open AIR hub. Benefits include: learning (especially with regard to African issues); networking; stronger visibility and reputation both at home and internationally; and access to funding for research and student assistants. The potential for Open AIR to further contribute to the hubs included: broader international networking, especially with an expanded reach within Africa; a louder African voice for global audiences; and capacity development of academics and students within the hub, leading eventually to becoming a recognised Centre of Excellence. As hub leaders, they foresee their continued development as academics and leaders; increased liaison with other hubs; hosting Open AIR-related activities; improved fundraising abilities; and increased outreach in all relevant areas.

Theme leaders have done their utmost to perform their responsibilities timeously, but found that other work obligations made this difficult. They recommended that in future Open AIR reduce reliance on the theme leaders especially for ongoing feedback to researchers. They felt that on average the ability of the researchers has improved and that this is directly linked to the mentorship of their Open AIR research. This includes their academic knowledge and skills; analytic ability and rigour; awareness of ethics requirements; interpersonal skills; global outlook; and ability to manage research funds.

From the researchers' perspective nearly 90% expressed satisfaction with their theme leaders' speed and quality of response to their questions and report drafts. There was some dissatisfaction expressed regarding the process of rolling-out the research, and management has noted this. Researchers' responses regarding the improvement in their abilities mirrored those of

the theme leaders. In addition, they also commented on their increased understanding of other African country environments, their ability to carry out interdisciplinary research, and increased managerial and organisational skills.

Nearly 50% of the researchers said that their Open AIR membership and work had contributed to them receiving promotion.

During the research process a relationship is developed by researchers with their subjects and it is important to maintain this if possible, for mutual benefit in the future. Practically, good relationships will lead to trust and the chance for more nuanced input into the study. Ethically, feedback should be given in all cases so that lessons can be communicated and further feedback elicited. Regarding the research subjects of our case studies, about 40% of researchers reported having been in contact with them in order to share results and findings, and the others will be encouraged to do so.

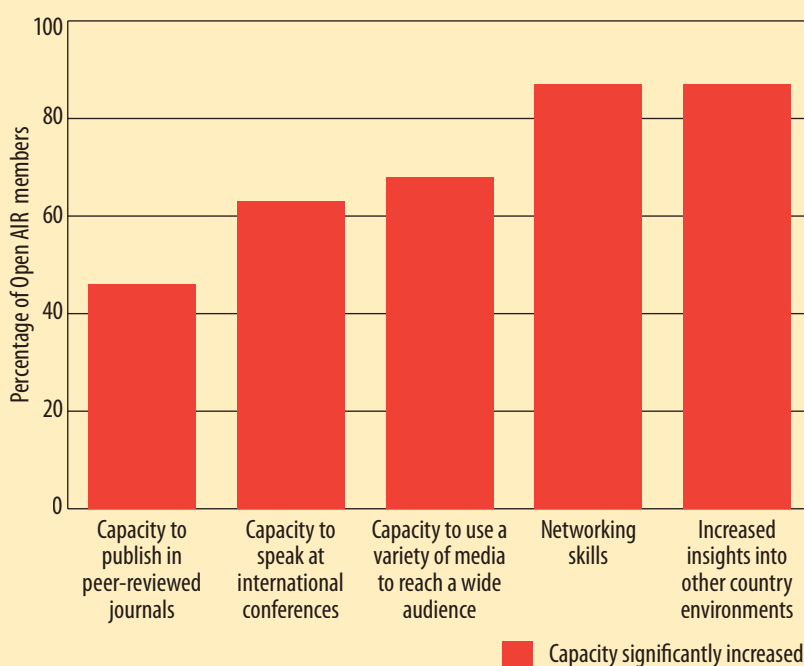
Regarding engagement with policymakers, about 40% of respondents reported that they have had interactions to share their Open AIR research findings. Lessons included:

- Evidence-based and context-specific research is a door-opener.
- Engagement with policymakers is a process. It is important to build trust, engage regularly, be proactive, and, if possible, engage with them early on in the research in order to have them feel ownership.
- Academic peer-reviewed publications, especially books, are important to policymakers.
- A large established international network engenders confidence.

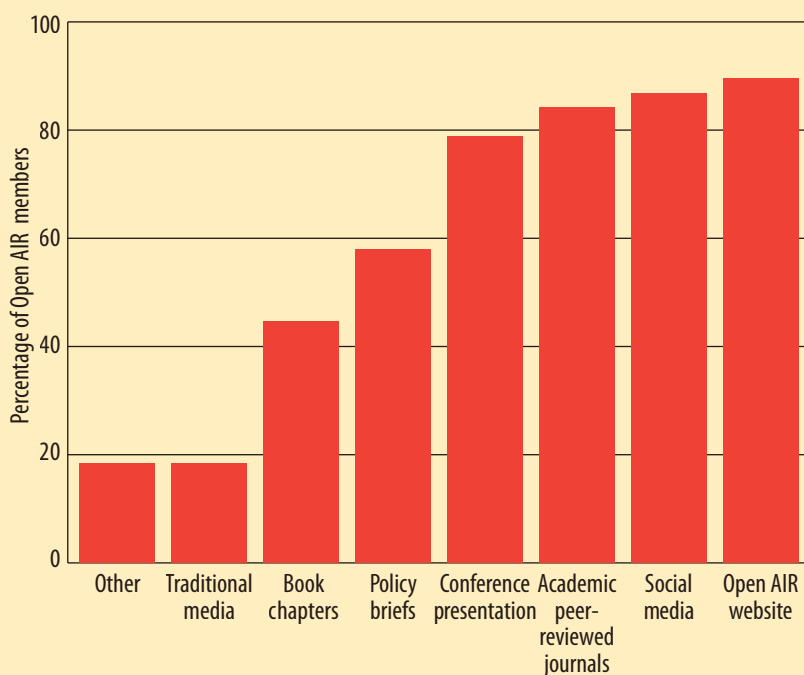
Very few respondents reported engaging with the private sector. This may indicate a stakeholder category that we do not need to target, or it may indicate a weakness of the network. This is a matter of serious interest and will be further studied by the Steering Committee. Similarly, less than 25% of respondents had interacted with advocacy groups. Our work is not yet visible to them.

All respondents were asked for their preferences in the dissemination

PERCENTAGE OF MEMBERS CITING INCREASE IN THEIR CAPACITY DUE TO INVOLVEMENT IN OPEN AIR

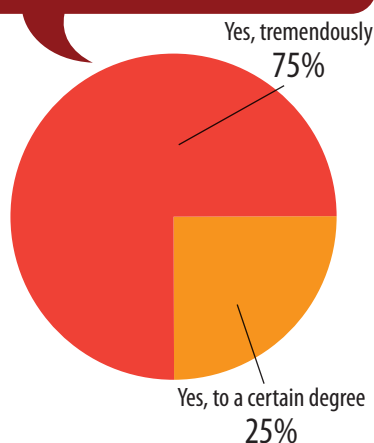


THE CHANNELS OPEN AIR MEMBERS ARE PLANNING TO USE IN THE NEAR FUTURE FOR RESEARCH DISSEMINATION





Do you feel that the ability of your researchers to carry out international quality research has improved?



of their work. Suggestions included publications; social media; conferences; seminars; and workshops. The range of suggestions demonstrates how broad our audience base is. With regard to the kinds of audiences they would prefer to reach with their research outputs, the following were selected in order of perceived importance: academics; government policymakers; innovators, IP experts and practitioners; research subjects; activists/advocates of "Open"; NGOs; the general public; traditional communities; the business sector. In addition to the different audiences mentioned above, researchers also mentioned that they would like to reach out to development practitioners, actors involved in community entrepreneurship, lawyers, and secondary school students.

The preferred channels are through the Open AIR website; social media; academic peer-reviewed journals; conferences; policy briefs; book chapters; and traditional media. Many respondents considered that they would need assistance in rewriting their research findings for different audiences. They acknowledged that the Open AIR website would be an excellent vehicle to disseminate findings to diverse audiences.

One aim of the network is to cultivate leadership qualities in all of its members. The responses by the theme leaders, hub leaders, and researchers, clearly indicate that this is happening.

Our other key group is the New and Emerging Researchers Group (the NERGs). Seventy-five percent (75%) of respondents indicated that they have interactions with the NERGs at least once a week, and some up to over 10 times a week. This is very pleasing because it is primarily through such interactions that leadership abilities are developed. Some level of discussion and collaboration takes place among certain of the NERGs. However, this needs to be better supported by means of specific platforms, and proactively shared amongst the NERG group. Most of the research and interaction among the NERGs is hub-specific at this time. Unfortunately the suggestions made by the NERGs for increased opportunities require funding.



Mid-term transition workshop

Open AIR held a workshop in Accra, Ghana, 8–10 February 2018, in order to assess and transition our activities at the midpoint of our partnership.

The key objectives were to engage with our empirical evidence; theory-building; identification of major cross-cutting issues; policy and practical influence; leadership development; and to consider our next steps. The 45 participants comprised all but one of our key members. Our Theory of Change and the input from our questionnaire were used to inform the programme structure and our discussions. A short report by our M&E consultant Marianne Brittijn, “Reflections on the Workshop”, concluded that it was a challenge to bring such a diverse group together to effectively address a number of very different topics.

Our discussions during the workshop produced a number of valuable insights which we will take forward into our future work.

In a constraint-based environment, innovation collaboration is a must. This means trust and openness. We need to better understand the risks and benefits, and the dynamics of inclusion and exclusion.

Currently ignored in policies relating to knowledge governance, is that informal innovation is an economic asset and must be protected and encouraged to scale up. Policies are not artifacts, hence the need to look at them more holistically and the process of policy development should not inhibit growth. Whatever the law and policy,

one cannot force open and collaborative business, but one can create an environment that facilitates or impedes, and a good example is IP laws.

Our communications and publication strategies include a number of approaches on how to get our recommendations into the policy realm in order to create an environment that facilitates innovation. This will be ongoing since laws and policies are a process.

We have evidence of increased recognition of the Open AIR network by government, policymakers, etc. in Africa, and evidence of increased uptake of Open AIR’s research impacting on laws, policies and/or practices related to our research.

The top-down lens of metrics used in global scholarship, misses a lot of innovation from Africa. We are working on the formulation of appropriate models to share with the international community.

We are also working on cross-cutting analysis of our research studies to create a conceptual foundation for deeper analysis.

A key recommendation for our future is to engage with our research through the lens of “rights”, especially rights such as gender equality, which are connected to development via the empowerment of women and girls.

Finally, Open AIR has now transitioned into a fully-fledged network rather than a series of smaller projects. This is gratifying and has significant positive implications for our work going forward. However, we will need to re-engage with the management and systems requirements underpinning such a structure.

Emerging research questions and themes

Our research has always sought to address “inclusion”, which meant conducting research with and for the benefit of society’s most marginalised people.

Marginalisation may stem from issues related to race, ethnicity, class, socio-economic background, gender, geography, and more. Almost always, we realise that marginalisation arises from the intersection of several factors.

Despite our recognition of intersectionality, we have seized upon one particular factor to focus on: gender. Our emerging emphasis on gender is, most fundamentally, a matter of women’s rights as human rights. This is also an economic imperative; society cannot move forward without the human capital of half our population (i.e. women) invested into problem-solving. We know that women are as innovative as men, but must overcome systemic barriers to the protection and adoption of women-led innovation. This is why “gender equality and empowerment of women and girls” is explicitly articulated among the Sustainable Development Goals, as SDG 5. It is also why the Government of Canada has adopted a “feminist development assistance” policy that closely mirrors what Open AIR is already doing.

Research has shown that IP and innovation frameworks not only ignore the disproportionate effects that IP has on women, but also project a male-dominated perspective on ownership and compensation. Dominant IP and innovation discourses are even less likely to consider the perspectives of intersectional marginalised groups, such as women in developing countries. Adding a gendered perspective will enrich our outcomes and findings, as well as contribute to the academic literature in this field. To do this, we will not only include gender in our current research but will also attract new scholars to engage with topics such as, how feminist legal theory and open access approaches to innovation overlap in their tenets, and how they can support one another. Scholars may also look at how knowledge is shared in gendered spheres and professions dominated by women, where IP laws have



ignored such knowledge as peripheral. Our scholars will then recommend how Open AIR can further incorporate gendered perspectives into other aspects of our research.

While gender issues have always been relevant to our researchers, this year we received new funding that will be solely dedicated to addressing the gender-related dimensions of our research questions and themes over the next three years. We were awarded one of the prestigious Queen Elizabeth II Diamond Jubilee Scholarships – Advanced Scholars (QES-AS) Grants. Over the next four years, this funding will allow us to invest in the empowerment of researchers seeking to investigate the gendered aspects of innovation in Africa. Funds will facilitate mobility for doctoral students, postdoctoral associates, and new scholars amongst our research hubs, where they will carry out short-term, high-impact projects.



Resources for new research on gender and innovation

This year, Open AIR garnered new funding from Universities Canada as part of its Queen Elizabeth Scholars Program. This funding constitutes a grant of nearly a half million Canadian dollars for scholars to conduct research at our hubs, and can be used for PhD students, postdoctoral candidates, and what are defined as “early career researchers”. The call for applications went out in 2017, and we are proud that a number of excellent applications were received, both from candidates already known to the network and entirely new candidates.

Open AIR has already had several QE scholars conduct research at our hubs, enabling our network of NERGs to expand, as well as having increased opportunities of moving between hubs. This mobility funding has allowed us to leverage our IDRC and SSHRC funding in order to support more NERGs and further integrate our hubs with each other. Indeed, a significant portion of our SSHRC funding has been used by the hubs to recruit and support numerous undergraduate as well as postgraduate (LLM and PhD) students, all of whom are helping to conduct groundbreaking research and gain additional research experience as well as other practical skills.

This new work is just the beginning for Open AIR. We anticipate dedicating an increasing amount of time and resources into studying the gender-related aspects of innovation in the foreseeable future.

Appendices

Appendix A: Open AIR outputs

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
MSMEs and Open Collaborative Innovation in Botswana	2018	Working Paper	Open AIR Working Paper Series	Ama, Okurut
ICTS in Agricultural Production and Potential Deployment in Operationalising Geographical Indications in Uganda	2018	Working Paper	Open AIR Working Paper Series	Oguamanam, Dagne
Determinants of Innovation in Ethiopian Informal-Sector Micro and Small Enterprises	2018	Working Paper	Open AIR Working Paper Series	Belete
Determinants of Innovation Capability in Informal Settings: The Case of Nigeria's Clustered ICT Microenterprises	2018	Working Paper	Open AIR Working Paper Series	Jegade
Product innovations and informal market competition in sub-Saharan Africa: Firm-level evidence.	2018	Presentation	Development Studies Association Conference 2018 on Global inequalities	Avenyo
On the 36th Session of the World Intellectual Property Organization – Intergovernmental Committee: An Interview with Professor Chidi Oguamanam	2018	Interview	The 36th Session of the World Intellectual Property Organization	Oguamanam
Open science: an opportunity for the global south?	2018	Presentation	Voices of the Global South	Nkoudou, Henry
Open Air information session	2018	Presentation	Numérique et patrimoine culturel en Afrique de l'Ouest	Ngom
Le numérique, quel enjeu pour les savoirs traditionnels?	2018	Presentation	Numérique et patrimoine culturel en Afrique de l'Ouest	Ngom
Innovation and Technology Hubs in Africa	2018	Presentation	48th Biannual Research Workshop	Kraemer-Mbula, Rutenberg
A Cross-Regional Research Partnership for Sustainable Development: The Open African Innovation Research experience	2018	Working Paper	Open AIR Working Paper Series	Oguamanam, de Beer
Understanding the transition to a digital economy and regulatory challenges for the East Africa postal sector	2018	Presentation	Working Group 4: Postal and Courier Service Development & Regulations	Abrahams
Intellectual Property and Open African Innovation	2018	Presentation	African Innovation Summit 2018	Kraemer-Mbula
Overcoming the Constraints of Finance in Micro and Small Enterprises: Lessons from Nigeria's Otigba Hardware Cluster	2018	Presentation	Forum 2018: Finance and Industrial Development	Jegade
Linking Openness, Learning and Innovativeness in Microenterprises: The case of Nigeria's Otigba Hardware Cluster	2018	Presentation	African Innovation Summit 2018	Jegade
Scaling-up of Micro and Small Enterprises: understanding the role of Openness in Informal Business Clusters	2018	Presentation	African Innovation Summit 2018	Jegade
Navigating International Agreements, Piracy Practices, and the Protection of Cultural Heritage	2018	Presentation	Workshop: Copyright and Music in the Global South	Ouma, Schonwetter
Skills development and innovation at Suame Magazine	2018	Presentation	African Innovation Summit 2018	Adu-Gyamfi
Product innovations and informal market competition in sub-Saharan Africa: A firm-level evidence	2018	Presentation	African Innovation Summit 2018	Avenyo

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
Innovation by Refugees in the Informal Sector	2018	Presentation	African Innovation Summit 2018	Tumaine
STI for sustainable consumption and production patterns (SDG 12)	2018	Presentation	3rd Annual Multi-stakeholder Forum on Science, Technology and Innovation for the Sustainable Development Goals Transformation Towards Sustainable and Resilient Societies	Kraemer-Mbula
Report Writing Retreat	2018	Presentation	Departmental Committee on Communication, Information and Innovation	Rutenberg
Institutionalisation and Informal Innovation in South African Maker Communities	2018	Journal Article	Journal of Peer Production	de Beer, Armstrong, Kraemer-Mbula, Ellis
Powering Change: Women in Innovation and Creativity	2018	Presentation	World Intellectual Property Day 2018	Rutenberg
Data for Development in the Global South: A Perspective from Egypt	2018	Presentation	Artificial Intelligence for Good Global Summit	Rizk
How climate change is driving Nigeria's herdsman conflict	2018	Media/blog	The Conversation Canada	Oguamanam
Administration, marketing, commercialization and licensing of Intellectual Property	2018	Presentation	Legal Awareness Workshop: "Know Your Rights."	Rutenberg
Emphasising the Intellectual Property Gender Gap	2018	Media/blog	Intellectual Property Unit Blog	Oriakhogba, Musiza
Rising Middle-Intellectual Property Powers dissolving the North/South polarisation in the international Intellectual Property system	2018	Media/blog	Intellectual Property Unit Blog	Schonwetter, Knoblich
Balancing the Copyright Regime in South Africa: Thinking Outside the Copyright Box	2018	Media/blog	Intellectual Property Unit Blog	Oriakhogba
Digital innovation and transformation: The Contribution from Tech Hubs	2018	Presentation	Sol Plaatje University Seminar	Abrahams
Finding your Intellectual Property Assets	2018	Presentation	Science Cafe on Intellectual Property Rights in Kenya	Rutenberg
Digital innovation and transformation in the Southern African Development Community postal sector	2018	Presentation	Postal Sector Workshop	Abrahams
Professor Ncube's inaugural lecture at UCT	2018	Media/blog	Intellectual Property Unit Blog	Ncube, Intellectual Property Unit
The Swamp Beneath the Sand – Cape Town's Water Crisis and the Question of Open Data	2018	Media/blog	Intellectual Property Unit Blog	Gray
Researching Open Innovation in Africa, Seeking Comparisons in Other Continents	2018	Presentation	Africa Open Science Hardware Summit	Jain, Armstrong, Maselwanyane, Adu-Gyamfi
Historic Gathering of Africa's Open Science Hardware Innovators	2018	Media/blog	Open AIR Blog	Armstrong
Celebrating Trailblazing Kenyan Women in Innovation and Creativity: World Intellectual Property Day 2018	2018	Media/blog	CIPIT Blog	Nzomo

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
World Intellectual Property Organization Expert Committee on Genetic Resources, Traditional Knowledge and Traditional Cultural Expressions Takes Another Look at Draft Genetic Resources Text in 2018	2018	Media/blog	Open AIR Blog	Oguamanam
The public interest in intellectual property law: African solutions to global challenges – An Inaugural Lecture by Professor Caroline Ncube	2018	Media/blog	Intellectual Property Unit Blog	Intellectual Property Unit
Intellectual Property Rights and Human Rights Law: A Difficult Relationship	2018	Media/blog	Intellectual Property Unit Blog	Jeewa
Moving beyond e-government: Digital government, smart cities, tech hubs and cyber security	2018	Presentation	Regional Meeting at Gauteng Province Treasury	Abrahams
Wandering Footloose: Traditional Knowledge and the 'Public Domain' revisited	2018	Journal Article	Journal of World Intellectual Property	Oguamanam
Research Grant Writing and Administration in an African Context	2018	Media/blog	Intellectual Property Unit Blog	Warner
Open AIR Researcher Presents at University of Cambridge Seminar Series on Open Intellectual Property Models	2018	Media/blog	CIPIT Blog	Nzomo
Open AIR NERGs Successfully Defend PhD Theses	2018	Media/blog	Open AIR Blog	Schorr
Africa Internet Academy Panel	2018	Presentation	Africa Internet Academy	Rutenberg
Reconciling Intellectual Property Rights and African Development: The Right to Development Conference Charts the Way Forward	2018	Media/blog	Open AIR Blog	Ugwu
Digital Technologies, Openness and Peer Collaboration: An "Access to Knowledge" Approach to Teaching and Learning	2018	Presentation	Center for Learning and Teaching Symposium	Rizk
E-Evidence and Cybercrimes	2018	Presentation	Training of Office of the Director of Public Prosecution and Investigators	Rutenberg
Digital innovation for a connected Africa: Future technologies outlook	2018	Presentation	Masters in Cybersecurity Centre for Cybersecurity Studies Nasarawa State University	Abrahams
Fostering good Internet governance in a complex ecosystem of the digital economy: A multi-stakeholder perspective	2018	Presentation	Internet Policy seminar	Abrahams
E-Commerce and the Law in Kenya: Consumer Protection	2018	Media/blog	CIPIT Blog	Nzomo
E-Commerce and the Law in Kenya: Taxation	2018	Media/blog	CIPIT Blog	Nzomo
Comments on Draft Copyright Amendment Bill 2017	2018	Media/blog	CIPIT Blog	Nzomo
Comments on Kenya Computer and Cybercrimes Bill 2017	2018	Media/blog	CIPIT Blog	Nzomo
How to succeed in grant writing, submissions, and admin	2018	Presentation	National Grant Writing Workshop	Rutenberg, Oguamanam, Rizk, Warner, Ncube, Kraemer-Mbula, de Beer, Abrahams
Egypt's New Investment Law: Creating Better Opportunities for Small Businesses?	2018	Media/blog	Open AIR Blog	El Saeed
Financing of Innovation	2018	Media/blog	Open AIR Blog	Shaaban

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
Towards an Alternative Assessment of Innovation in Africa	2018	Working Paper	Open AIR Working Paper Series	Rizk, El Said, Weheba, de Beer
Behind the Number: A Review of Index Methodologies to Improve Innovation Measurement in Africa	2018	Working Paper	Open AIR Working Paper Series	
Roundtable to discuss the Intellectual Property Policy at Strathmore University	2018	Presentation	Strathmore University Intellectual Property Policy Stakeholder Workshop	Rutenberg, Nzomo, Murithi
Open AIR's Sileshi Hirko Wins Competitive Grant	2018	Media/blog	Open AIR Blog	Hirko
Research Grant Writing & Administration	2018	Presentation	National Workshop on Research Grant Writing & Administration	Rutenberg
Open Intellectual Property Models of Emerging Technologies and Implications for the Equitable Society	2018	Presentation	Open Intellectual Property in Emerging and Developing Economies Seminar	Nzomo
Benefit Sharing in Open Data	2018	Presentation	Symposium on Farmers' Access to Data	de Beer
The Many Faces of Scholarly Communications	2018	Media/blog	Open AIR Blog	El Houssamy
Open AIR Expansion into Morocco	2018	Media/blog	Open AIR Blog	Yassine
Keeping up with international approaches: SA copyright limitations and exceptions for educational activities	2018	Media/blog	Intellectual Property Unit Blog	Musiza
High Court Upholds Citizens' Right of Access to Information on Pro-Government #GOKDelivers, #JubileeDelivers Adverts: Judgment in Katiba Institute vs President's Delivery Unit	2018	Media/blog	CIPIT Blog	Nzomo
Intellectual Property Unit – A Poem	2018	Media/blog	Intellectual Property Unit Blog	Oriakhogba
World Intellectual Property Organization Setting Up External Offices in Africa - What to Expect	2018	Media/blog	CIPIT Blog	Nzomo
12 Reasons to Apply for CopyrightX in Kenya: The GoDown Arts Centre and Code Intellectual Property Trust	2018	Media/blog	CIPIT Blog	Nzomo
Intellectual Property Collateralisation in the Age of the Movable Property Security Rights Act: The Case of Nakumatt Supermarkets	2018	Media/blog	CIPIT Blog	Nzomo
2017 Highlight: New Path-Breaking Research on Competition Law in Kenya	2018	Media/blog	CIPIT Blog	Nzomo
Egypt's Independent Music Industry: A Realm of Sharing and Creativity	2018	Book Chapter	Research Handbook on Intellectual Property and Creative Industries	Rizk, Brown, Waelde, eds
The informal basis of hubs of entrepreneurship and innovation in Africa	2018	Presentation	UCL Conference on Innovative informality	Kraemer-Mbula
A Scan of South Africa's Maker Movement	2017	Working Paper	Open AIR Working Paper Series	de Beer, Armstrong, Ellis, Kraemer-Mbula
Patent data raises doubts on Kenya status as an innovation hub	2017	Interview	Business Daily	Rutenberg
Linking working organisation, competence building and innovation in formal and informal micro-enterprises: Evidence from Southern Nigeria	2017	Presentation	3rd Africalis Conference	Jegade
Official Launch: Sprott Centre for African Research and Business	2017	Presentation	Carleton University & Sprott School of Business	Schorr

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
Keynote on "Farmer's Access to Data"	2017	Presentation	International Symposium on "Farmer's Access to Data"	de Beer
Intellectual Property Unit submits its comments concerning the Department of Trade and Industry's Draft Intellectual Property Policy, Phase I	2017	Media/blog	Intellectual Property Unit Blog	Intellectual Property Unit
Economy of Clustering, Innovation and Scaling-up: An Analysis of West Africa's Silicon Valley	2017	Presentation	3rd Africalics Conference	Jegade
Keynote at Launching Manshurat Qanuneya	2017	Presentation	Law and Society Research Unit at the American University in Cairo	Rizk
Entrepreneurial Behaviour and Firm Performance of Ethiopian Tour Operators	2017	Presentation	PhD Defence at Vrije Universiteit	Muleta
The Opportunities of Data-Driven Innovation for Digital Entrepreneurship	2017	Presentation	Egypt Entrepreneurship Summit 2017	Salem
Response to Keynote on "AI and the Building of a More Inclusive Society"	2017	Presentation	Symposium on Artificial Intelligence and Inclusion, hosted by the Global Network of Internet and Society Research Centers	Rizk
Research excellence in Africa: Policies, perceptions, and performance	2017	Journal Article	Science and Public Policy	Kraemer-Mbula, Tijssen
Innovation and Entrepreneurship: The Nollywood Growth Channel	2017	Presentation	The Annual GEIA Economic Summit	Oguamanam
"Employment impacts of product innovations in sub-Saharan Africa: Firm-level evidence."	2017	Presentation	5th Congress of African Economists	Avenyo
"Learning and innovation performance in developing countries: Empirical study of informal enterprises in Ghana"	2017	Presentation	3rd Africalics International Conference on Emerging Innovation Systems for Sustainable Industrial Development in Africa	Avenyo
Agriculture and the Future of Africa	2017	Media/blog	The Punch Newspaper	Oguamanam
Teaching and Research in Intellectual Property 2017: The Object and Purpose of Intellectual Property	2017	Media/blog	Intellectual Property Unit Blog	Intellectual Property Unit
Keynote at Data for Women Hackathon	2017	Presentation	InfoTimes	Rizk
Makerspace experiences with inclusion and diversity: Canadian and African cases	2017	Presentation	Ontario Makers and Mentors Innovation Conference	Armstrong, El Houssamy, Tumaine, Boudreau
What Could a Canadian Feminist International Assistance Policy Mean for Africa?	2017	Presentation	Africa Study Group & Open AIR	Diallo Drame, Parpart, Nivyabandi
High Tech Hubs, Informal Sector Innovation & Metrics and Policies	2017	Presentation	The Digital Economy: Information Technology, Knowledge and Intellectual Property	Nzomo
A2K4D Annual Workshop: Collaborative Innovation for Open and Inclusive Development	2017	Media/blog	Intellectual Property Unit Blog	Intellectual Property Unit
The Informal Economy in Developing Countries: Hidden Driver of Economic Growth in Africa	2017	Presentation	World Intellectual Property Organization	Kraemer-Mbula

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
Global Perspectives on the role of the Maker Movement in Promoting Development	2017	Presentation	Access to Knowledge for Development Center Seventh Annual Workshop Collaborative Innovation for Open and Inclusive Development: Data, MakerSpaces, and Mobile Telephony	El Houssamy
Data, Our Environment and Our Mobility	2017	Presentation	Access to Knowledge for Development Center Seventh Annual Workshop Collaborative Innovation for Open and Inclusive Development: Data, MakerSpaces, and Mobile Telephony	Rizk
Connecting the Dots between Knowledge, Openness, Networking and Partnership in Knowledge Networks: the case of the otigba Computer Village in Lagos, Nigeria	2017	Presentation	15th Globelics Conference	Jegade, Oluwale
As we celebrate Nigeria's ratification of the WCT, WPPT, The Beijing Treaty and Marrakesh Treaty...	2017	Media/blog	Intellectual Property Unit Blog	Oriakhogba
"Are African Micro and Small Enterprises misunderstood? Unpacking the "soft components of innovation"	2017	Presentation	15th Globelics Conference	Jegade
Connecting the dots between Knowledge, Openness, Networking and Partnership in a Nigerian Cluster: the case of Otigba Market Cluster	2017	Presentation	15th Globelics Conference	Jegade
Africa's Maker Movement: An Overview of Ongoing Research	2017	Media/blog	Open AIR Blog	de Beer
Organic Agriculture for Food Security, Wealth Creation and Environmental Sanity	2017	Distinguished Speaker Series	Executive Training Workshop on Organic Agriculture and Green Economy	Oguamanam
Economy of Clustering, Innovation and Scaling Up: an analysis of West Africa's Silicon Valley	2017	Presentation	15th Globelics conference	Jegade
Connecting the Dots Between Knowledge, Openness, Networking, Partnerships and Innovation Within a Cluster: Otigba Nigeria as a Case Study	2017	Presentation	15th Globelics conference	Jegade
Canada: Copyright Law and Practice	2017	Journal Article	International Copyright Law and Practice	de Beer
Starting Up Large Scale Research Partnerships	2017	Presentation	Social Sciences and Humanities Research Council Partnership Grant Start-up Meeting	de Beer
Perspectives on research excellence in the Global South: assessment, monitoring and evaluation in developing-country contexts	2017	Other	Science Granting Councils Initiative	Kraemer-Mbula, Tijssen
Indigenous Knowledge, Protecting it for the future generations	2017	Other	Indigenous Knowledge System EXPO 2017	Ncube
Engineering digital government [e-enablement of government services]	2017	Presentation	GITOC annual strategy session	Abrahams
Walrus Talks Africa's Next Generation	2017	Presentation	The Walrus Foundation	Oguamanam
International Perspectives on Innovation in Solar Energy	2017	Presentation		Rizk
Integrating Gender Perspectives into African Innovation Research	2017	Media/blog	Open AIR Briefing Note	de Beer, Degendorfer, Ellis, Gaffen
The Digital Revolution in MENA: Experiences and Insights	2017	Presentation		Rizk

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
The Laboratory of Research on Entrepreneurship and Management of Organizations	2017	Presentation	Hassan II University	Rizk
Open Data Brings Farmers and Researchers Together	2017	Media/blog	Open AIR Blog	Baarbé
Canada's 2017 Copyright Review: Reflections on the Congress 2017	2017	Media/blog	Open AIR Blog	Hirko
Global trends in digital economy formation: Digital innovation, collaborative working in tech hubs and other phenomena	2017	Presentation	Communications Regulatory Authority of Namibia Board and staff training sessions	Abrahams
University of Cape Town Intellectual Property Unit doctoral student presents at South Africa Innovation Summit 2017	2017	Media/blog	Intellectual Property Unit Blog	Intellectual Property Unit
Continuous professional development training for legal practitioners on intellectual property in the digital age	2017	Presentation	Lexsynergy Kenya Seminar	Rutenberg
School of Business Faculty Service Appreciation Award	2017	Award and Recognition	American University in Cairo	Rizk
African Intellectual Property Organization Intellectual Property Law	2017	Book Chapter	International Encyclopedia of Law	Ngom
Intellectual Property Issues Across French and English Africa	2017	Presentation	Université Hassan II 1st Open AIR Meeting	de Beer
Board Member election	2017	Award and Recognition	the Globelics Scientific Committee	Jegade
Power Relations and Knowledge Governance Systems: The Case of Egypt	2017	Presentation	5th International Conference on 'Managing Organizations in Africa', Africa Research Group 2017	El Houssamy
The rising of solutions from local entrepreneurs and the use of traditional knowledge in West and Central Africa: role of intellectual property	2017	Presentation	Africa Research Group 2017 Conference	Ngom
5th International Conference on 'Managing Organizations in Africa'	2017	Presentation	Africa Research Group 2017	El Houssamy
What's special about tech hubs? Collaborative working, external value creation for firms, risk and governance	2017	Presentation	Information Systems Audit and Control Association South Africa Chapter Annual Conference	Abrahams
African Regional Intellectual Property Organization and the University of Cape Town Intellectual Property Unit sign Memorandum of Understanding	2017	Media/blog	Intellectual Property Unit Blog	Intellectual Property Unit
Understanding content modification by Junior High Schools STEM teachers in Ghana,	2017	Presentation	International Conference on Education, Development, and Innovation	Adomdza
Contributions to The Centre for Science, Technology and Innovation Indicators annual report for 2016/17 (STI data/ survey in SA)	2017	Report	The Centre for Science, Technology and Innovation Indicators	Kraemer-Mbula
South Africa's Department of Trade and Investment releases Draft Intellectual Property Policy Phase 1 (2017)	2017	Media/blog	Intellectual Property Unit Blog	Intellectual Property Unit
Parallel Importation Prohibitions and the 'Politics of the Copy' in Africa	2017	Media/blog	Intellectual Property Unit Blog	Schonwetter, Gray

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
Endorsement of “Developmental Universities in Inclusive Innovation Systems”	2017	Media/blog	Springer International Publishing AG	Kraemer-Mbula, Sutz, Goransson, Arocena
The Future of Research Communications and E-Scholarship	2017	Presentation	Scholarly Communications Institute	El Houssamy
Maker spaces in developing countries: Sites of innovation despite simultaneous challenges	2017	Media/blog	Access to Knowledge for Development Center Blog	Hosny
Open AIR NERG Presents at Windsor Symposium on Copyright User Rights and Access to Justice	2017	Media/blog	Open AIR Blog	Ugwu
Round table on Copyright and disabilities of piracy	2017	Presentation	Ecrans Noirs, Central Africa Film Festival	Ngom
The Government IT Officers Council’s complex digital landscape: Innovation and the 21st century Chief Information Officer	2017	Presentation	Government IT Officers Council meetings	Abrahams
Protecting innovation with patents: A case study on the process	2017	Presentation	Conference On Intellectual Property Rights by Jomo Kenyatta University of Agriculture and Technology	Rutenberg
Open AIR’s research on affordable access to 3D printing technologies in Africa: insights from 2 interviews with social entrepreneurs in Kenya	2017	Media/blog	Intellectual Property Unit Blog	Van Wiele
University of Cape Town Intellectual Property Unit co-publishes Intellectual Property, Innovation and Development paper authored by Nobel Prize winner Joseph Stiglitz et al.	2017	Media/blog	Intellectual Property Unit Blog	Intellectual Property Unit
Intellectual Property and the Digital Economy	2017	Working Paper	Seminar paper, for a training on the digital economy organised for the Cameroonian MPs and Senators	Ngom
Seminar on the digital economy in Cameroon	2017	Presentation	National Assembly of Cameroon / The Francophonie	Ngom
New Centre for Intellectual Property and Information Technology Law Research: An Assessment of the Evolution of Kenya’s Information and Communication Technology Law and Policy Framework	2017	Media/blog	CIPIT Blog	Nzomo
Strengthening innovation support systems at Ghana’s Suame Magazine	2017	Media/blog	Open AIR Blog	Adu-Gyamfi
Promoting right of access to knowledge for educational advancement: Indian court decision a model for South Africa?	2017	Media/blog	Intellectual Property Unit Blog	Oriakhogba
Are African micro and small enterprises misunderstood? Unpacking the “soft” components of innovation	2017	Journal Article	International Journal of Technological Learning, Innovation and Development.	Kraemer-Mbula, Jegede, Lorenz, Takala-Greenish, Garba, Mutambala, Esemu
Making, Institutionalisation, and Informal Innovation: The South African Case	2017	Journal Article	The Journal of Peer Production	Armstrong, de Beer, Ellis, Kraemer-Mbula

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
The protection of software in Cameroon	2017	Media/blog	Tech Mag	Ngom
Creating a Data Commons	2017	Presentation	International Association for the Study of the Commons Conference	de Beer
World Intellectual Property Organization Special Committee on Genetic Resources, Traditional Knowledge, and Traditional Cultural Expression Shies Away from Consolidating its Mandate but Agrees on Lack of Indigenous Participation	2017	Media/blog	Open AIR Blog	Oguamanam
Exploring Crowd-Based Capitalism in Africa's Sharing Economy	2017	Media/blog	Open AIR Blog	Groux, de Beer
Rethinking copyright for Indigenous creative works	2017	Media/blog	Policy Options	Oguamanam
A Cross-Regional Research Partnership for Sustainable Development: The Open African Innovation Research Experience	2017	Working Paper	Open AIR Working Paper Series	Oguamanam, de Beer
"Making" Knowledge for Innovation and Development: Researching Kenyan Makerspaces	2017	Media/blog	Open AIR Blog	Baarbé, Nzomo
7th Harambe Bootcamp for entrepreneurs	2017	Presentation	Harambe Cameroon	Ngom
Open Data's Effect on Food Security	2017	Media/blog	Open AIR Blog	Baarbé, de Beer, Thuswaldner
A Data Commons for Food Security	2017	Working Paper	Open AIR Working Paper Series	de Beer, Blom, Baarbé
Youth Entrepreneurship in Africa: A Solution to Unemployment and Underdevelopment?	2017	Presentation	CIC National Capital Branch & Africa Study Group	Schorr
Ramifications of the World Intellectual Property Organization Intergovernmental Committee for Intellectual Property and Development	2017	Book Chapter	Protecting Traditional Knowledge: The World Intellectual Property Organization Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore	Oguamanam
Nigeria Movie Industry: Technology, Innovation and Entrepreneurship –Toward a New Intellectual Property Pathway	2017	Presentation	Global Debate on Intellectual Property, Trade and Development: Past and Future	Oguamanam
A2K4D faculty, research staff and an American University in Cairo economics student participated in the Harvard Law School CopyrightX Summit 2017	2017	Media/blog	American University in Cairo School of Business Website	El Houssamy, Rizk
Innovation by "Makers" in South Africa's Gauteng Province	2017	Media/blog	Open AIR Blog	Armstrong, Kraemer-Mbula
The Maker Movement in Gauteng Province, South Africa	2017	Working Paper	Open AIR Working Paper Series	Armstrong, Kraemer-Mbula
The Suitability of International Intellectual Property Laws for Protecting Traditional Knowledge and Indigenous Innovations in Africa	2017	Journal Article	African Journal of Intellectual Property	Ugwu
The informal economy in developing nations: a hidden engine of growth	2017	Interview	World Intellectual Property Organization Magazine	Kraemer-Mbula, Wunsch-Vincent
Regulation of Big Data and Open Data Concepts	2017	Presentation	Global Institute for Food Security Annual Conference	de Beer

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
The Maker Movement in Africa	2017	Presentation	"Hacia Cuidades Colaborativas" (Toward Collaborative Cities)	de Beer
Leadership, content and technology in the digital era: Creating public value	2017	Presentation	National Treasury Colloquium: Learning and Innovation for Excellence in Public Finance Management	Abrahams
Canada's 2017 copyright review: Academics' perspectives	2017	Presentation	Congress of Social Sciences and Humanities	Hirko
Panel on Managing Large-Scale Partnerships	2017	Presentation	Congress of Social Sciences and Humanities	de Beer
Interview with Ian Langat (1809 Ltd.)	2017	Interview	Strathmore University	Matu-Mureithi
Challenging the Meaning of Innovation: Lessons from Refugee-Founded Organizations in Kampala	2017	Media/blog	Open AIR Blog	Tumaine
Reconciling the Right to Learn with Copyright Protection in the Digital Age: Limitations of Contemporary Copyright Treaties	2017	Presentation	Copyright User Rights and Access to Justice Symposium	Ugwu
Western Pop Music Sampling Arabic Melodies: The Case of Jay Z's 'Big Pimpin,'	2017	Presentation	CopyrightX Summit 2017	El Houssamy
Mobile Innovation as the Cornerstone of Socio-Economic Development in Kenya	2017	Media/blog	Open AIR Blog	Mwangi
International Intellectual Property Treaties Bring Tension in Africa's Homegrown Knowledge Governance	2017	Coverage/ Commentary/ Review	Intellectual Property Watch	Munyaradzi Makoni
Towards Intellectual Property Securitisation in Kenya: Movable Property Security Rights Act Passed	2017	Media/blog	CIPIT Blog	Nzomo
Know your rights	2017	Presentation	Africa Intellectual Property Rights Policy Dissemination Workshop	Rutenberg
Intellectual Property Rights and Innovation: Assessing Regional Integration in Africa VIII	2017	Working Paper	Open AIR Working Paper Series	Ncube, Schonwetter, de Beer, Oguamanam
The Intellectual Property Treaty Landscape in Africa, 1885 to 2015	2017	Working Paper	Open AIR Working Paper Series	Ncube, de Beer, Baarbé
Dangers of Suspect Orthodoxy and Knowledge Marginalization	2017	Presentation	Buffet Institute of Global Medical Studies Symposium on Medical Traditions, Law, and Culture	Oguamanam
2017-2018 Tariffs for Collecting Societies Gazetted	2017	Media/blog	CIPIT Blog	Nzomo
Fair Dealing, Book Piracy and Anti-Photocopying Debate in Kenya	2017	Media/blog	CIPIT Blog	Nzomo
Three Centuries and Counting: The Emergence and Development of Intellectual Property Law in Africa	2017	Book Chapter	The Oxford Handbook of Intellectual Property Law	Ncube
Thoughts on an Innovation Exchange Portal for Kenya	2017	Media/blog	CIPIT Blog	Nzomo
Intellectual Property and Commercial Contracts	2017	Presentation	NIAL's Drafting Commercial Agreements on Banking Documentation Training Workshop	Etuk-Ekong
Summary of Saskatoon Symposium and Focus Group	2017	Report	ABS Canada, Focus Group Report on Access and Benefit Sharing	Oguamanam

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
Building 21st Century Research Partnerships	2017	Presentation	SSHRC President's Panel Speaker Congress 2017	de Beer
The Aboriginal Right to Traditional Knowledge: Technological, Legal, and Institutional Hurdles	2017	Presentation	Symposium Speaker ABS Canada Symposium	de Beer
Missing the Point: Call for Competition Enforcement of Intellectual Property Infringement	2017	Media/blog	CIPIT Blog	Nzomo
CopyrightX 2017 Recap: A Kenyan Perspective	2017	Media/blog	CIPIT Blog	Nzomo
Irony: Lack of Creativity and Innovation in Celebrating World Intellectual Property Day	2017	Media/blog	CIPIT Blog	Nzomo
The Nollywood Phenomenon: Open Innovation & Entrepreneurship	2017	Presentation	Presentation for the African Study Group	Oguamanam
Pharmaceuticals Battle in Trade mark Infringement and Passing off case: Harleys Ltd v Sun-Pharma	2017	Media/blog	CIPIT Blog	Mwangi
Revision	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
World Intellectual Property Day Presentation	2017	Presentation	Kenya Industrial Property Institute , US Embassy, Kenya Copyright Board, Octopizzo Foundation	Rutenberg, Nzomo, Mwangi, Matu-Mureithi, Murithi, Makanga
Innovation – Improving Lives	2017	Presentation	World Intellectual Property Day 2017	Nzomo, Rutenberg, Murithi, Matu-Mureithi
Patent Practice	2017	Presentation	Law Society of Kenya: Seminar-Intellectual Property Laws	Rutenberg
Remedies	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
Supplements to Copyright: Secondary Liability and Paracopyright	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
Law Society of Kenya Seminar-Intellectual Property Laws	2017	Presentation	Law Society of Kenya	Rutenberg
Mentoring Fridays: Intellectual Property for the Creative Economy	2017	Presentation	Africa Digital Media Institute	Nzomo
Intellectual Property for the Creative Economy	2017	Presentation	Mentoring Fridays	Nzomo
Cultural Theory	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
Interview with Gibson Juma (Bitsoko)	2017	Interview	Strathmore University	Matu-Mureithi
Local Software Firm NLS sues Kenya Commercial Bank for Copyright Infringement, Obtains Temporary Injunction	2017	Media/blog	CIPIT Blog	Nzomo
The litigation of copyright and neighboring rights	2017	Presentation	The Republic of Guinea Bar Association / the Training Center for Francophone Lawyers in Africa	Ngom
Common Misconceptions of Patents in Egypt	2017	Media/blog	Open AIR Blog	Hosny
Historical Antecedents and Paradoxes that Shaped Kenya's Contemporary Information and Communication Technology Policies	2017	Journal Article	Harvard Africa Policy Journal	Rutenberg, Gichuki, Gwagwa

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
Future Scenarios for Achieving SDG 5: Gender Equality and Empowerment of Women and Girls	2017	Presentation	UN Women, UNESCO, World Intellectual Property Organization Symposium Speaker United Nations Headquarters	de Beer
The Past, Present, and Future of Canada's Intellectual Property Strategy	2017	Presentation	CIGI Workshop on Canada in International Law @150	de Beer
South African Maker Movement Workshop	2017	Presentation	Open AIR	de Beer, Armstrong, Kraemer-Mbula, Ellis, Van Wiele, Nzomo, El Houssamy
In the Shadow of Stockholm '67: TK in the Global Intellectual Property Space	2017	Presentation	Intellectual Property and Global Development: 50 years after Stockholm Symposium	Oguamanam
Governance of Indigenous Genetic Resources and Traditional Knowledge in Canada: Lessons Learned and Areas of Opportunity	2017	Presentation	Saskatoon Focus Group: Towards an Aboriginal-Sensitive Access and Benefit Sharing Policy	Phyllis Intellectual Property
Fair Use	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
The global digital economy – Rapid growth of digital platforms and the digital marketplace	2017	Presentation	Middelburg Chamber of Commerce, Trade and Digital Literacy Symposium, Women's Economic Empowerment Programme	Abrahams
The Rights to Distribute, Perform, and Display	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
Legal and Institutional Considerations for Plant Variety Protection and Food Security in African Development Agendas: What solutions from World Intellectual Property Organization?	2017	Journal Article	Journal of Intellectual Property Law & Practice	Isiko Štrba
The Cameroon legal landscape for the digital economy	2017	Working Paper	Seminar paper	Ngom
The Rights to Reproduce and Modify	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
New Centre for Intellectual Property and Information Technology Research: Do Patents, Utility Models Encourage Innovation in Kenya?	2017	Media/blog	CIPIT Blog	Nzomo
Intellectual Property Rights	2017	Presentation	Intellectual Property Rights Initiative Africa	Rutenberg
Seminar on "Learning systems in the informal economy"	2017	Presentation	Human and Social Dynamics Research Seminar	Kraemer-Mbula
The Mechanics of Copyright	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
Roundtables on the Valuation of Intangible Capital in West Africa	2017	Presentation	University of Abidjan / French Institute of Côte d'Ivoire	Ngom
Institutionalizing Open Data in Government	2017	Report	Social Science Research Network	Schonwetter
Women in Technology	2017	Presentation	Women in Technology Event – Celebrating Women's International Day 2017	Rizk
Open AIR East Africa Distinguished Speaker Series: Dr. Henry Mutai on Intellectual Property, Trade and Regional Integration in Africa	2017	Media/blog	Open AIR Blog	Nzomo

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
A Framework for Assessing Technology Hubs in Africa	2017	Journal Article	New York University Journal of Intellectual Property	Mwangi, Nzomo, Millar, Rutenberg, de Beer
A2K4D Faculty and Research Staff representation in South African Maker Movement Workshop	2017	Media/blog	American University in Cairo School of Business Website	El Houssamy
The CopyrightX Community: Strengthening the Network	2017	Presentation	CopyrightX Summit 2017	Rizk, El Houssamy
World Intellectual Property Organization 33rd Intergovernmental Committee Session Puts Traditional Cultural Expressions on the Spotlight	2017	Media/blog	Open AIR Blog	Oguamanam
Conceptual Analysis of Copyright in Digital Music: Implications for New Media Licensing for Ringtones under the Copyright Act	2017	Journal Article	Gravitas Review of Business and Property Law	Adewopo
Click Here to Agree: Managing Intellectual Property When Crowdsourcing Solutions	2017	Journal Article	Business Horizons	de Beer
Fair Dealing or Fair Use: Comparing User Rights in Copyright Law	2017	Invited Lecture	CopyrightX, Faculty of Law, University of Cape Town	de Beer
Maker Movement in Africa	2017	Presentation	Open AIR Workshop	Rutenberg, Nzomo
Authorship	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
A Glimpse into the Sharing Economy: An Analysis of Uber Driver-Partners in Egypt	2017	Report	Social Science Research Network	Rizk
Welfare Theory	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
Social Media Law	2017	Presentation	Strathmore Business School Presentation to Executive MBA class	Rutenberg
The Subject Matter of Copyright	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
Back to school of the Senegal Bar Association	2017	Presentation	Senegal Bar Association	Ngom
Fairness and Personality Theories	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
A New Look at High Tech Hubs in the 'Digital Savannah': Part 1	2017	Media/blog	Open AIR Blog	Nzomo
Patenting the Un-patentable: Lessons for African Patent Systems from a Review of Patent Subject Matter Exclusions in Kenya	2017	Journal Article	African Journal of Intellectual Property	Rutenberg, Nzomo
Skills Development and Innovation at Suame Magazine, Ghana	2017	Media/blog	Open AIR Blog	Adu-Gyamfi
Understanding Knowledge Dynamics and Scaling-Up in Micro Enterprises in Otigba Market Cluster	2017	Media/blog	Open AIR Blog	Jegede
The Foundations of Copyright Law	2017	Presentation	CopyrightX:GoDown 2017 Program	Nzomo
Do Patents and Utility Models Encourage Innovation in Kenya?	2017	Journal Article	Journal of Intellectual Property Law & Practice	Mwangi, Rutenberg
Open Innovation in Development: Integrating Theory and Practice Across Open Science, Open Education, and Open Data	2017	Working Paper	Open AIR Working Paper Series	de Beer

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ICT strategy development: from design to implementation – case of Egypt	2017	Book Chapter	Strategic Information Systems and Technologies in Modern Organizations,	Rizk
Book Review: “Digital Kenya: An Entrepreneurial Revolution in the Making” edited by Bitange Ndemo & Tim Weiss	2017	Media/blog	CIPIT Blog	Nzomo, Matu-Mureithi
The dynamics of EU-Africa research and innovation cooperation programmes	2017	Book Chapter	Africa-Europe Research and Innovation Cooperation Global Challenges, Bi-regional Responses,	Kraemer-Mbula, Vaitas, Essegbey
Book Launch: “The Informal Economy in Developing Nations: Hidden Engine of Innovation?”	2017	Presentation	Science Policy Research Unit	Kraemer-Mbula
Research excellence – Beyond the buzzword	2017	Journal Article	University World News	Kraemer-Mbula, Tijssen
Calibrating Copyright for Creators and Consumers: Promoting Distributive Justice and Ubuntu	2017	Book Chapter	What if We Could Reimagine Copyright?	Ncube
Making Copyright Markets Work for Creators, Consumers and the Public Interest	2017	Book Chapter	What If We Could Reimagine Copyright?	de Beer
Proposed Amendments to Intellectual Property Laws in Kenya	2017	Media/blog	IP Kenya Blog	Nzomo
Evidence-based Intellectual Property Policymaking	2017	Working Paper	Open AIR Working Paper Series	de Beer
Open AIR Students Present at Carleton’s Institute of African Studies	2017	Media/blog	Open AIR Blog	Ellis, Gaffen, Baarbé
Open AIR North Africa Distinguished Speaker Series: Ibrahim Al-Safadi on Makerspaces and Employment Opportunities	2017	Media/blog	Open AIR Blog	El Houssamy, Hosny
Crowdsourcing	2017	Presentation	50th Annual Hawaii International Conference on System Science	de Beer
Futures from the Outside	2017	Invited Lecture	Hawaii Center for Futures Studies, Department of Political Science	de Beer
The paradoxes of democracy and the rule of law of “Rethinking Society for the 21st Century”	2017	Report	International Panel of Social Progress report	Kraemer-Mbula
Towards a National Intellectual Property Policy in Kenya	2017	Journal Article	Jahazi	Rutenberg, Nzomo
A Framework for Assessing Technology Hubs in Africa	2017	Working Paper	Open AIR Working Paper Series	Rutenberg, Nzomo, Mwangi, Millar, de Beer
Evidence-Based Intellectual Property Policymaking	2016	Media/blog	Open AIR Blog	de Beer
The Intellectual Property Treaty Landscape in Africa, 1885 to 2015	2016	Presentation	IAS Undergrad Conference	Baarbé
The Informal Economy in Developing Nations: Hidden Engine of Innovation?	2016	Presentation	South Africa Science Forum	Kraemer-Mbula
The Informal Economy in Developing Nations: Hidden Engine of Innovation?	2016	Book	Cambridge University Press	Kraemer-Mbula, Wunsch-Vincent
5 Kenyan start-ups among World’s Top 100 Social Innovations using Digital Technology	2016	Media/blog	CIPIT Blog	Nzomo, Matu-Mureithi

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A2K4DxRiseUP: How a college dropout reinvented how we approach education in the Middle East	2016	Media/blog	The Access to Knowledge for Development Cente Blog	El Houssamy, El Safty
Copyright, and Photographs or Videos of Public Art, in South Africa: An Imperfect Picture	2016	Journal Article	African Journal of Information and Communication	Van Wiele
Technology Transfer for Climate Change Mitigation: A Perspective from Kenya	2016	Journal Article	The African Journal of Information and Communication	Mwaura
Review: On intellectual property cooperation and the public interest in Africa	2016	Coverage/ Commentary/ Review	WIReDSpace	Isiko Štrba
Conceptualising Knowledge Governance for Development	2016	Journal Article	The African Journal of Information and Communication	Schonwetter, Armstrong
Data Protection in Zimbabwe	2016	Book Chapter	African Data Privacy Laws	Ncube
Maker Spaces: Science & Technology Innovation Track Rise-Up Summit 2016	2016	Distinguished Speaker Series	Open AIR, A2K4D, and the American University of Cairo	Ibrahim Ishaq Al-Safadi
Book Review: Intellectual Property and Innovation Law in Kenya and Africa by Prof. Ben Sihanya	2016	Media/blog	IP Kenya BLog	Nzomo
Empowerment Through Open Scholarship: Transcending Boundaries	2016	Presentation	Open Access Symposium 2016	Schonwetter
El Houssamy Presents at Egypt Entrepreneurship Summit	2016	Media/blog	Open AIR Blog	El Houssamy
Recognizing Informal Sector Innovation: Implications for Traditional Knowledge Development in Africa	2016	Media/blog	Open AIR Blog	Ugwu
Gender, Intellectual Property, and Innovation: Open AIR's Future Research	2016	Media/blog	Open AIR Blog	de Beer, Gaffen, Ellis
Decolonising Intellectual Property Law in Pursuit of Africa's Development	2016	Journal Article	World Intellectual Property Organization Journal	Ncube
Canada's Copyright Tariff-Setting Process: An Empirical Review	2016	Journal Article	Journal of the Copyright Society of the USA	de Beer
The Importance of Service Marks in the Regime of Intellectual Property Rights in Nigeria: A Case for Nigerian Female Entrepreneurs	2016	Presentation	Nigerian Institute of Advance Legal Studies staff seminar	Etuk-Ekong
Asking the Right Questions: Comment on Kenyan Message to World Intellectual Property Organization Inventors Assistance Program by Intellectual Property Watch	2016	Media/blog	CIPIT Blog	Nzomo
Tiered or Differentiated Approach to Traditional Knowledge: Insights for Understanding Potential Operations of the Concept and Evidentiary Thresholds	2016	Presentation	The Seminar on Intellectual Property and Traditional Knowledge	Oguamanam
Trade Mark vs Company Name Registration: Innscor Int. Battles Rwandan Companies, Pizza Inn Ltd and Chicken Inn Ltd	2016	Media/blog	IP Kenya BLog	Nzomo
Research Excellence in Africa	2016	Presentation	Science Granting Councils Initiative Annual Forum,	Kraemer-Mbula
Week «Creative Commons in Francophone Africa / Study Days on the Dissemination, Translation & Use of CC 4.0 Licenses	2016	Presentation	Creative Commons France / the Francophonie	Ngom
Utility Model Protection in Kenya: A Case for Substantive Examination	2016	Journal Article	The African Journal of Information and Communication	Rutenberg, Makanga

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Traditional Knowledge & the Public Domain	2016	Presentation	Who Owns Tradition? Reconceptualising the Protection of Indigenous and Traditional Knowledge	Oguamanam
High Court Declares Section 30A of the Copyright Act Unconstitutional and CMO License Agreement Unlawful	2016	Media/blog	IP Kenya BLog	Nzomo
Measuring the South African National System of Innovation	2016	Book Chapter	The Emergence of Systems of Innovation in South(ern) Africa: Long Histories and Current Debates.	Kraemer-Mbula, Sehlapelo
Informal Innovations and the South African Innovation System	2016	Book Chapter	The Emergence of Systems of Innovation in South(ern) Africa: Long Histories and Current Debates.	Kraemer-Mbula
It's about to get easier for African innovators to protect their inventions	2016	Other	Quartz Africa	Oguamanam
Open AIR Call for Case Studies	2016	Media/blog	Intellectual Property Unit Website	Schonwetter
Reviewing and Reforming the Intellectual Property System	2016	Presentation	Intellectual Property Statistics for Decision Makers Conference	de Beer
Meet Open AIR's New and Emerging Researchers Group: First Stop, the AUC	2016	Media/blog	Open AIR Blog	Ellis, Kamel, El Said, Weheba, El Houssamy
Understanding the Dynamics of Knowledge Transfer in Nigeria's Oti-gba Hardware Cluster	2016	Media/blog	Open AIR Blog	Jegade
It's About to Get Easier for African Innovators to Protect their Inventions	2016	Coverage/ Commentary/ Review	Quartz Africa	Oguamanam, Masinde
The Future of Intellectual Property	2016	Presentation	Intellectual Property Society of Australia & New Zealand: NSW Twilight Series	de Beer, Baarbé
Digital Entrepreneurship and Data Driven Innovation	2016	Presentation	2016 Egypt Entrepreneurship Summit	El Houssamy
Professor Carys Craig Infuses the Open Access Movement with Feminism at the University of Ottawa	2016	Media/blog	Open AIR Blog	Soliman, de Beer, Ellis, Gaffen
Evidence-based Intellectual Property Policymaking: An Integrated Review of Methods and Conclusions	2016	Journal Article	Journal of World Intellectual Property	de Beer
Copyright Tariff-Setting Procedures	2016	Presentation	Senate Standing Committee on Banking, Trade, and Commerce	de Beer
The Future of Law and Innovation in the Procession	2016	Presentation	Law Society of New South Wales	de Beer
Evidence-based Intellectual Property Policymaking for Intellectual Property Decision Makers	2016	Presentation	Intellectual Property for Decision Makers 2016 Conference	de Beer
Foresight into the Future of an Intellectual Property Practice	2016	Invited Lecture	Intellectual Property Society of Australia and New Zealand	de Beer
High Court Strikes Down Appointment of Anti-Counterfeit Agency Board Chairman Twice in a Row	2016	Media/blog	IP Kenya BLog	Nzomo
High Court Declares Appointment of Anti-Counterfeit Agency Inspectors Unconstitutional	2016	Media/blog	IP Kenya BLog	Nzomo
Appropriation and Intellectual Property in the Informal Economy	2016	Book Chapter	The Informal Economy in Developing Nations: Hidden Engine of Innovation? New Economic Insights and Policies	de Beer, Wunsch- Vincent

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Innovation and the Informal Economy	2016	Book Chapter	The Informal Economy in Developing Nations: Hidden Engine of Innovation? New Economic Insights and Policies	de Beer, Fu, Wunsch-Vincent
Open Data and Ownership at the Global Open Data for Agriculture and Nutrition Summit	2016	Media/blog	Open AIR Blog	Baarbé
"Making" Innovation Happen: Open AIR Hosts a Successful Workshop on the Maker Movement at uOttawa	2016	Media/blog	Open AIR Blog	Ellis
Dr. Kakooza "Dealing with Trans-Border Quasi-Intellectual Property	2016	Media/blog	Open AIR Blog	Nzomo
Makerspace Archetypes in South Africa	2016	Presentation	IAS Undergrad Conference	Ellis
Measuring Innovation for Contextually Appropriate STI Policy	2016	Presentation	IAS Undergrad Conference	Gaffen
What Knowledge Commons for Developing Countries	2016	Presentation	3rd IASC Conference on Knowledge Commons	de Beer
Innovation Policy and the Informal Economy: Toward a New Policy Framework	2016	Book Chapter	The Informal Economy in Developing Nations: Hidden Engine of Innovation? New Economic Insights and Policies	Kraemer-Mbula, Konte
Informal Manufacturing of Home and Personal Care Products in South Africa	2016	Book Chapter	The Informal Economy in Developing Nations: Hidden Engine of Innovation? New Economic Insights and Policies	Kraemer-Mbula
As the Curtin Draws on TK: World Intellectual Property Organization-Intergovernmental Committee Session 31 Kicks the Can Further Down the Road	2016	Media/blog	Food for Thought	Oguamanam
Indigenous Knowledge & Intellectual Property	2016	Book	JUTA: Contemporary Studies in Law and Applied Research Series	Ncube, de Plessis
Sui Generis Legislation for the Protection of Traditional Knowledge in South Africa: An Opportunity Lost	2016	Book Chapter	Indigenous Knowledge & Intellectual Property	Ncube
How the #makermovement Scaled up Globally	2016	Presentation	Ontario Makers and Mentors Innovation Conference	de Beer, Ellis, Jain
Reconciling Traditions: A Legal Workshop on Access and Benefit Sharing, Indigenous Traditional Knowledge, and Biodiversity	2016	Presentation	ABS Canada: uOttawa	Oguamanam
Innovation in the Informal Economy	2016	Book Chapter	The Informal Economy in Developing Nations: Hidden Engine of Innovation?	de Beer
Counting the Knowledge Commons	2016	Presentation	3rd International Association for the Study of the Commons Conference on the Knowledge Commons	de Beer
TRIPS Article 67 October 2016 Report from Canada	2016	Report	Intellectual Property Trade Policy Division	de Beer
Intellectual Property Rights and Public-Sponsored Internships in Private Spaces: Lessons from the E4E (Education for Employment) Program in Nigeria	2016	Distinguished Speaker Series	Open AIR and the University of Ottawa Centre for Law, Technology and Society	Ikechi Mgbeoji
Dealing with Digital Property in Civil Litigation	2016	Book Chapter	Annual Review of Civil Litigation 2016	de Beer
Kenya's Protection of Traditional Knowledge and Cultural Expressions Act No. 33 of 2016 Comes into Force	2016	Media/blog	IP Kenya BLog	Nzomo
Intellectual Property Rights in Traditional Knowledge: Enabler of Sustainable Development	2016	Journal Article	Utrecht Journal of International and European Law	PhillIntellectual Property

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Effective Open Data: User-centered, Joined-Up and Interoperable	2016	Presentation	2016 GODAN Summit	de Beer, Blom, Baarbé
Ownership of Open Data: Governance Options for Agriculture and Nutrition	2016	Working Paper	GODAN: GLObal Open Data for Agriculture and Nutrition	de Beer, Blom, Baarbé
High Court Acquits Staff, Former CEO and Wife of Stealing from Copyright Society	2016	Media/blog	IP Kenya BLog	Nzomo
IDRC Networked Economies Meeting	2016	Presentation	International Development Research Centre	Rizk
Inclusive Innovation: Understanding African Innovation	2016	Presentation	CPR South	de Beer
Upcoming Research into Informal Entrepreneurs	2016	Media/blog	Open AIR Blog	Schorr
Les Defis D'etendre Open AIR Dans des Pays Africains Francophones	2016	Media/blog	Open AIR Blog	Cumbaa
How Designing Crops for Global Food Security and Open AIR are Working Together	2016	Media/blog	Open AIR Blog	Blom
Ownership of Open Data (GODAN Summit 2016)	2016	Media/blog	Open AIR Blog	Blom, de Beer
Inclusive Innovation: Lessons from Africa for the World's ICT Policy Makers	2016	Media/blog	Open AIR Blog	de Beer
The Skill Set of the Intellectual Property Practitioner of the Future – Where Will Intellectual Property be in 20 Years	2016	Presentation	Intellectual Property Institute of Canada: 90th Annual Meeting	de Beer, Baarbé, Ellis
Lessons from Africa for the World's ICT Policymakers	2016	Presentation	Communication Policy Research South 2016	de Beer
Open Data Ownership and Governance	2016	Presentation	Global Open Data for Agriculture and Nutrition Summit	de Beer
The Future of IP: Lessons for the Practitioner	2016	Presentation	Intellectual Property Institute of Canada Annual Conference 2016	de Beer
Cross-Cultural Dynamics in Palliative Care: The Emerging Canadian Scenario	2016	Journal Article	Dalhousie Law Journal	Oguamanam
Teachers as grassroots entrepreneurs: modeling the dissemination of local STEM innovation in Ghana	2016	Presentation	International Conference on Education, Development, and Innovation	Adomdza
A New Look at Intellectual Property and Innovation in Africa	2016	Coverage/ Commentary/ Review	les Nouvelles - Journal of the Licensing Executives Society	Patrick Terroir
Power of Trade Marks Registrar to Permit Further Evidence Under Rule 52: Case of Strategic Industries v Rebecca Fashion (Kenya) Ltd	2016	Media/blog	IP Kenya BLog	Nzomo
Customs Officers Cannot Enforce Intellectual Property Rights: Court of Appeal Judgment in Kenya Revenue Authority v Doshi Iron Mongers	2016	Media/blog	IP Kenya BLog	Nzomo
Algeria and Nigeria to Host World Intellectual Property Organization External Offices in Africa	2016	Media/blog	IP Kenya BLog	Nzomo
Makerspaces Critical for Advancing Hardware Innovation, Learning	2016	Coverage/ Commentary/ Review	Epoch Times	Ellis, Armstrong, Vaidyanath
Addressing Legal Issues When Crowdsourcing Solutions	2016	Presentation	14th Open and User Innovation Conference, Harvard Business School	de Beer

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Court of Appeal Settles 20 Year Copyright Dispute: Case of Mount Kenya Sundries v Macmillan Publishers	2016	Media/blog	IP Kenya BLog	Nzomo
Private Prosecutor Can Appear as Witness in Same Criminal Copyright Suit: Case of Albert Gacheru Kiarie and Wamaitu Productions	2016	Media/blog	IP Kenya BLog	Nzomo
Goodwill as Constitutionally Protected Property: High Court Case of Bia Tosha Distributors v Kenya Breweries, EABL, Diageo	2016	Media/blog	IP Kenya BLog	Nzomo
Court Upholds Anti-Counterfeit Agency Raid and Seizure: Shikanisha Shoes Collection v Attorney General	2016	Media/blog	IP Kenya BLog	Nzomo
Dealing with Trans-Border Quasi-Intellectual Property	2016	Distinguished Speaker Series	Centre for Intellectual Property and Information Technology Law and Strathmore University Law School.	Anthony Kakooza
ARIPO Copyright Office Publishes Survey Findings on Status of African Collective Management Organizations	2016	Media/blog	IP Kenya BLog	Nzomo
The 'Sharing Economy' in Perspective	2016	Media/blog	CIPIT Blog	Rutenberg
Public-Private Partnerships, Global Intellectual Property Governance and Sustainable Development	2016	Interview	ICTSD	Oguamanam
Proposed Draft National Music Bill: More Licenses, More Confusion and Yet Another Fund	2016	Media/blog	IP Kenya BLog	Nzomo
Book Review: Intellectual Property Law in East Africa by Prof. Bakibinga and Dr. Kakungulu	2016	Media/blog	IP Kenya BLog	Nzomo
Copyright Dispute over Safaricom's "BLAZE" Campaign: Transcend Media Granted Anton Pillers Against Saracen Media	2016	Media/blog	IP Kenya BLog	Nzomo
Outdoor Advertising Dispute in City Clock v Country Clock Trade Mark and Industrial Design Case	2016	Media/blog	IP Kenya BLog	Nzomo
Incidental Use and Copyright Exhaustion: High Court Ruling in Nairobi Map Service v Celtel Kenya (Zain Kenya)	2016	Media/blog	IP Kenya BLog	Nzomo
Implementing the International Treaty on Plant Genetic Resources for Food and Agriculture – A Regulatory and Intellectual Property Outlook	2016	Book Chapter	Innovation in Agricultural Genomics: Overcoming Complexities in the Intellectual Property Regulatory Complex	Oguamanam
Trade Mark Squatting, Blackmail and Prior Use Defence: High Court Ruling in Clips Kenya v Brands Imports Africa	2016	Media/blog	IP Kenya BLog	Nzomo
Entrepreneurship and Innovation in Egypt	2016	Book	AUC Press	Rizk, Azzazy
Factors in Africa's Transition to Knowledge-Based Economies	2016	Presentation	Canadian Association of African Studies	de Beer, Oguamanam, Schorr, Gaffen
Digital Entrepreneurship and Development in Egypt: An Ecosystem Analysis	2016	Media/blog	Access to Knowledge for Development Center Blog	El Houssamy
Innovation, Makerspaces and the Future: A Lesson from the University of Pretoria	2016	Media/blog	Open AIR Blog	Ellis
Assessing the Impacts of Intellectual Property: An Interdisciplinary Literature Review and Analytical Framework	2016	Presentation	ATRIP 2016	de Beer
Beyond the Poster Boy of the Maker Movement	2016	Media/blog	Open AIR Blog	Ellis

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New Law Professor on Reaching the Top	2016	Award and Recognition	University of Cape Town - Profile	Ncube
Distinguished Alumni Award	2016	Award and Recognition	American University in Cairo	Rizk
Practical Commercial Aspects of IP	2016	Presentation	Intellectual Property Seminar, Strathmore University	Rutenberg
Intellectual Property Law and Governance Perspectives from Kenya	2016	Presentation	World Intellectual Property Organization-World Trade Organization 13th Colloquium for Teachers of Intellectual Property	Nzomo
The Open African Innovation Partnership: A New Approach to Canada-Africa Relations for the 21st Century	2016	Presentation	Canadian Association of African Studies Conference	de Beer
Focus Group Report	2016	Presentation	GAC Roundtable	Oguamanam, PhillIntellectual Property
Investing in Cameroon: land of attractiveness	2016	Presentation	The Presidency of the Republic of Cameroon	Ngom
Work organisation, Forms of Employee Learning and National Systems of Education and Training	2016	Journal Article	European Journal of Education	Kraemer-Mbula
Nigeria Faces New Security Threat Fueled by Climate Change and Ethnicity	2016	Media/blog	The Conversation	Oguamanam
Plant Genetic Resources Interdependence: Reintegrating Farmers into The Global Food System	2016	Book Chapter	Food Systems Governance: Challenges for justice, equality and human rights	Oguamanam
Towards a Concerted Knowledge Consciousness: Opportunities, Tensions and Push-backs	2016	Other	A2K4D's 6th Annual Workshop	Rizk, El Houssamy, Weheba
Open AIR Case Study Nairobi Workshop	2016	Media/blog	Open AIR Blog	Hirko
Twitter Recap of the Nairobi Workshop	2016	Media/blog	Open AIR Blog	Degendorfer
IP Law and Traditional Knowledge Development: Implications of Contemporary West African IP Agreements, for Better or Worse?	2016	Presentation	GSLEDD Conference	Ugwu
Intellectual Property Good for Business	2016	Media/blog	Business Daily Africa / CIPIT Law Blog	Rutenberg
East Africa Innovation Summit	2016	Presentation	East Africa Innovation Summit	Rutenberg
Objectives and Key Terms – Draft World Intellectual Property Organization/Intergovernmental Committee #30 Working Document on Genetic Resources	2016	Presentation	Africa Group Roundtable on World Intellectual Property Organization/ Intergovernmental Committee Negotiations, World Intellectual Property Organization Secretariat	Oguamanam
Canadian Association of Law Teachers Prize for Academic Excellence	2016	Award and Recognition	Canadian Association of Law Teachers	de Beer
The Open AIR partnership: A Conversation About Research and Learning Across the Country, Across Continents an Across Communities	2016	Presentation	Canadian Association of Law Teachers	Awad, Mgbeoji, Mogyros, Dagne, Oguamanam, de Beer
IP for Hardware and Software Engineers	2016	Presentation	E4C – Engineering for Change Webinar	Rutenberg
IP Boot Camp	2016	Presentation	East Africa Innovation Summit	Rutenberg

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Leadership Dialogue on Open Access and African Research Publishing in the 21st Century	2016	Presentation	Regional Stakeholder Workshop	Schonwetter
Intellectual Property and Traditional Knowledge in the Global Economy: Translating Geographical Indications for Development	2016	Book Chapter	Intellectual Property Policy, Law and Administration in Africa: Exploring Continental and Sub-regional Co-operation	Dagne
Drawn out battle over genetic resources dampens Africa's hopes	2016	Media/blog	The Conversation; IP Watch; and Open AIR Blog	Oguamanam
Intellectual Property Policy, Law and Administration in Africa: Exploring Continental and Sub-regional Co-operation	2016	Book	Routledge	Ncube
Centre for Intellectual Property and Information Technology Law hosts Open AIR Project Case Studies Launch	2016	Media/blog	CIPIT Blog	Nzomo
World Intellectual Property Day 2016: Technological Revolution Defines our Culture, the Past and the Present	2016	Media/blog	Daily Nation / CIPIT Law Blog	Rutenberg
Intellectual Property in Agriculture: Challenges and Prospects of Collaborative Research and Development	2016	Presentation	Conference on Disseminating Agricultural Research: Bridging the Gap Between Idea and Adoption	Oguamanam
The Nollywood Phenomenon: An Evolutionary Narrative of Techno-Collaborative Entrepreneurial Dynamic	2016	Presentation	Strathmore University, Open Africa Innovation Research Phase 3 Inaugural Workshop	Oguamanam
Research in Africa	2016	Presentation	CIPIT Open AIR Workshop	Rutenberg
ICT Law and Policy	2016	Presentation	Africa ICT Policy Database Launch	Rutenberg
Second Conference of Cultural Enterprises and Creative Industries of Cameroon	2016	Presentation	The Ministry of Art and Culture, Cameroon	Ngom
Conceptualizing Openness for the Prospect of Development	2016	Presentation	A2K4D: Global Open Data Day	Morsi
The Sharing Economy and the Future of Work, Entrepreneurship and Markets	2016	Presentation	A2K4D and AUC Venture Lab	Rizk
Beyond openness: Investigating the success factors of open approaches to collaboration and innovation	2016	Presentation	AUC School of Business, Brown Bag Seminar	Morsi
Digital Dividends: Launch of the 2016 World Development Report	2016	Other	Aga Khan Foundation Canada	de Beer
Open Innovation in Africa: A Recipe for Death of Tech Start-ups?	2016	Media/blog	CIPIT Blog	Mwangi
Open African Innovation Partnership: A New Approach to Canada-Africa Relations in the 21st Century	2016	Presentation	International Law Group, Faculty of Law, University of Ottawa	Oguamanam, de Beer
Research Networks – Lessons learned from the Open AIR project	2016	Presentation	Global, African and Chinese Law Networks – Nature, Experience and Opportunities – Information Session	Schonwetter
Specialized Intellectual Property Courts in Africa: The Case of Uganda	2016	Journal Article	Global Perspectives and Challenges for the Intellectual Property System	Isiko Štrba
Innovation hubs in Southern Africa	2016	Book Chapter	Innovation Africa: emerging hubs of entrepreneurship	Kraemer-Mbula, Comins
Successful Data-Driven Innovation Examples from the MENA and other Regions	2016	Presentation	IDRC Event: Data-Driven Innovation in the MENA Region	Weheba
Prof. Osei-Tutu Speaks at the University of Ottawa	2016	Media/blog	Open AIR Blog	Degendorfer

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
Increasing the Resiliency of Traditional Knowledge Development in Modern IP Law: Lessons from Contemporary Agreements of Peru and the Andean States	2016	Presentation	GSAÉD's 19th Interdisciplinary Conference: Building Resiliency	Ugwu
Intellectual Property Rights: The Key to Supporting Economic Growth? - A different View	2016	Media/blog	CIPIT Blog	Nzomo
Open AIR Presents at Fourth Global Congress on IP and the Public Interest	2016	Media/blog	Open AIR Blog	Nzomo
Recent Developments in African Regulation of Cybercrime: An Overview of Proposed Changes to the South African Framework	2016	Journal Article	Journal of Internet Law	Ncube
In the Public Interest: How Kenya Quietly Shifted from Fair Dealing to Fair Use	2016	Journal Article	World Intellectual Property Organization-World Trade Organization Intellectual Property Colloquium Research Paper Series 2016	Nzomo
Comparative Global Censorship: Persisting Modes and Shifting Paradigms	2015	Presentation	4th Global Congress on Intellectual Property and the Public Interest	Rizk, El Houssamy
Power Relations and Knowledge Governance Systems at High Technology Hubs: The Case of Egypt	2015	Presentation	4th Global Congress on Intellectual Property and the Public Interest	El Houssamy
Is Creativity and Innovation All about Intellectual Property?	2015	Media/blog	Open AIR Blog	Nzomo
How Open Innovation Drives Development	2015	Presentation	4th Global Congress on Intellectual Property and the Public Interest	de Beer
Sustainability of Research Networks Working in the Global South on IP, Innovation, and Development	2015	Presentation	4th Global Congress on Intellectual Property and the Public Interest	de Beer, Oguamanam, Schonwetter, Kraemer-Mbula, Warner, Nzomo, El Houssamy
Agriculture and Plant Varieties Protection: Public Interest as Contested Interest	2015	Presentation	4th Global Congress on Intellectual Property and the Public Interest	Oguamanam
Recap of 2015 4th Global Congress on Intellectual Property and the Public Interest	2015	Media/blog	CIPIT Blog	Nzomo
Renewing Hope for the Silicon Savannah: Quick Thoughts from the Special Tech Round Table	2015	Media/blog	CIPIT Blog	Mwangi
Comparison of the Legal Rules for Mechanisms to Support Sustainable Land-Use	2015	Presentation	Governing Global Climate Change: Potential and Prospects of a Paris Accord	PhillIntellectual Property
Global Censorship and Access to Knowledge: Shifting Modes, Persisting Paradigms	2015	Book	Information Society Project, Yale Law School; Access to Knowledge for Development Centre, American University, Cairo; Instituto de Tecnologia & Sociedade do Rio	Rizk
Unleashing the Economic Power of Data for Entrepreneurship in Egypt	2015	Presentation	GESR Initiative and Misr El Khier Foundation	El Houssamy
Why We Need to Reconsider how Knowledge and Innovation are Measured	2015	Media/blog	Access to Knowledge for Development Center Blog	Weheba

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
Capacity-Building Workshop on Using Competition Law to Promote Access to Health Technologies	2015	Presentation	UNDP Competition Law Conference	Schonwetter
Openness in Development	2015	Presentation	IDRC Cairo Roundtable	El Houssamy
Digital Entrepreneurship in Egypt: Opportunities and Obstacles	2015	Media/blog	Access to Knowledge for Development Center Blog	El Houssamy
"Open" Innovation Policy Frameworks	2015	Presentation	ATRIP 2015	de Beer
ATRIP 2015: An Open AIR Student's Perspective	2015	Media/blog	Open AIR Blog	Ellis
Open AIR Receives Multimillion Dollar SSHRC Grant	2015	Media/blog	Open AIR Blog	Schorr
Plant Breeders' Rights in Africa: Implications for "Stakeholders"	2015	Presentation	ATRIP 2015	Oguamanam
Conventional Intellectual Property Rights Regimes and African Indigenous Heritage: Where do We Go from Here?	2015	Presentation	ATRIP 2015	Laltaika
Joint Academic Submission to the Draft Copyright Bill in South Africa	2015	Public Comment	UCT IP Unit	Schonwetter, Ncube
Behind Egypt's Communication Outage of 2011: Censorship and Economic Liberty	2015	Book Chapter	Global Censorship: Shifting Modes, Persisting Paradigms, Information Society Project, Yale Law School	Rizk
South Africa & Zimbabwe: Silencing Critical Voices'	2015	Book Chapter	Global Censorship: Shifting Modes, Persisting Paradigms, Information Society Project, Yale Law School	Ncube
Academic comments on Draft Copyright Bill (South Africa)	2015	Presentation	DTI National Consultative Workshop	Schonwetter
Marrakesh Treaty – Implications for and Implementation in South Africa	2015	Presentation	IFLA WLC	Schonwetter
June Open AIR Network Meeting in Cairo	2015	Media/blog	Open AIR Blog	Elcock
Protecting Intellectual Capital	2015	Presentation	6th Global Entrepreneurship Summit	Nzomo, Rutenberg
Intellectual Property and Development	2015	Presentation	Law School Global League Summer School	Schonwetter
Internet Rights, Cultural Development and balancing Features in South African Copyright Reform	2015	Presentation	International Stakeholder Workshop	Schonwetter
African Scholars for Knowledge Justice	2015	Presentation	Mid Project Workshop	Schonwetter
Open Data in Developing Countries: Embedding Open Data Practice	2015	Report	UCT IP Unit	Schonwetter
A Differentiated Approach to Plant Variety Protection in Africa	2015	Discussion Paper	SSRN	Munyi
Marrakesh Treaty - Implementation Guide for South Africa	2015	Briefing Paper	UCT IP Unit	Schonwetter, Van Wiele
Assessing the Economic Importance of Intellectual Property in Canada	2015	Commissioned Study	Industry Canada	de Beer
Open Innovation Policy Frameworks: Intellectual Property, Competition, Investment & Other Market Governance Issues	2015	Commissioned Study	Industry Canada	de Beer
Revolution, Graffiti and Copyright: The Cases of Egypt and Tunisia	2015	Journal Article	The African Journal of Information and Communication	Rizk
Current African Intersections between Intellectual Property Rights and Knowledge Access	2015	Journal Article	The African Journal of Information and Communication	Schonwetter, Armstrong

TITLE	YEAR	TYPE	PUBLICATION/ EVENT	AUTHOR(S)
Licensing Open Data in Developing Countries: The Case of the Kenyan and City of Cape Town Open Data Initiatives	2015	Journal Article	The African Journal of Information and Communication	Schonwetter
Open Innovation and Knowledge Appropriation in African Micro and Small Enterprises	2015	Journal Article	The African Journal of Information and Communication	de Beer, Armstrong
Intellectual Property Protection of Traditional Knowledge and Access to Knowledge in South Africa	2015	Book Chapter	Indigenous Intellectual Property: A Handbook of Contemporary Research	Ncube
Fair is as Fair Does: Contractual Normative Regulation of Copyright user contracts in South Africa in GB Dinwoodie	2015	Book Chapter	Intellectual Property and General Legal Principles: Is IP a Lex Specialis?	Ncube
The Politics of National Intellectual Property Policy Design and the Provision of Health Services in South Africa	2015	Journal Article	South African Intellectual Property Journal	Ncube
Traditional Knowledge Governance Challenges in Canada	2015	Book Chapter	Research Handbook on Indigenous Intellectual Property	de Beer
Africa's Food Security in a Broken Global Food System: What Role for Plant Breeders' Rights?	2015	Journal Article	Queen Mary Journal of Intellectual Property	Oguamanam
Breeding Apples for Oranges: Africa's Misplaced Priority over Plant Breeders' Rights	2015	Journal Article	Journal of World Intellectual Property	Oguamanam
Intellectual Property and the Right to Adequate Food: A Critical African Perspective	2015	Journal Article	African Journal of International & Comparative Law	Oguamanam
Farmers' and Breeders' Rights: Bridging Access to, and IP Protection of, Plant Varieties in Africa	2015	Journal Article	The African Journal of Information and Communication	Munyi
Human Capital Barriers to Technological Absorption in African Micro and Small Enterprises	2015	Journal Article	The African Journal of Information and Communication	Belete

Appendix B: Open AIR network members

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SURNAME	FIRST NAME	PARTNERSHIP ROLES	ORGANISATION	COUNTRY OF RESIDENCE	COUNTRY OF CITIZENSHIP	RESEARCH COUNTRIES
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Appendix C: Acronyms and abbreviations

A2K4D	Access to Knowledge for Development Center	IDRC	Sustainable Development International Development Research Centre
ABS	Access and Benefit Sharing	ILO	International Labour Organization
A2K	Access to knowledge	ICANN	Internet Corporation for Assigned Names and Numbers
A2K4D	Access to Knowledge for Development Research Center	LASU	Lagos State University
AISII	Africa Innovation Summit	MENA	Middle East and North Africa
AERC	African Economic Research Consortium	ASRT	National Academy for Scientific Research and Technology
OAPI	African Intellectual Property Organization	NRF	National Research Foundation
AfricaOSH	African Open Science and Hardware	NERG	New and Emerging Research Group
ASK Justice	African Scholars for Knowledge Justice	NEPAD	New Partnership for Africa's Development
ATPC	African Trade Policy Centre	NIALS	Nigerian Institute of Advanced Legal Studies
AU	African Union	NRF CoE	National Research Foundation Centres of Excellence, South Africa
AUC	American University in Cairo	OMMIC	Ontario Makers and Mentors Innovation Conference
ARIA	Assessing Regional Integration in Africa VIII Report	OCSD	Open and Collaborative Science for Development
ATRIP	International Association for the Advancement of Teaching and Research in Intellectual Property	OBD	Open Data Barometer
CAAS	Canadian Association of African Studies	OD4D	Open Data for Development
CIPIT	Centre for Intellectual Property and Information Technology Law	AfricaOSH	Open Science and Hardware
CIGI	Centre for International Governance Innovation	QES-AS	Queen Elizabeth II Diamond Jubilee Scholarships – Advanced Scholars Program
CLTS	Centre for Law, Technology and Society	SGCI	Science Granting Councils initiative
CC	Creative Commons	STI	Science, Technology and Innovation Scientific Board for the Africalics Community
DST	Department of Science and Technology	SOAS	Arbitration in Africa Conference
LABO EMO	Entrepreneurship and Management of Organizations Lab	SCARAB	Sprott Centre for African Research and Business
P2IRC	Food Security's Plant Phenotyping and Imaging Research Centre	SSHRC	Social Sciences and Humanities Research Council of Canada
GEIA	Global Economic Institute for Africa	SDG	Sustainable Development Goal
GFAR	Global Forum on Agricultural Research	SARChI	The South African Research Chairs Initiative
GII	Global Innovation Index	FAO	UN Food and Agriculture Organisation
NoC	Global Network of Internet and Society Research Centers	UNCTAD	UN Conference on Trade and Development
IGC	WIPO Intergovernmental Committee	UNESCO	UN Educational, Scientific and Cultural Organization
IPLCs	Indigenous peoples and local communities	UCT	University of Cape Town'
IAI	Innovation Activity Index	UJ	University of Johannesburg
IERI	Institute for Economic Research on Innovation	uOttawa	University of Ottawa
IGC	Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore	WIPO	World Intellectual Property Organization
ITS	Institute for Technology and Society		
IPRs	Intellectual property rights		
ICTSD	International Centre for Trade and		



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