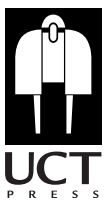
INNOVATION & INTELLECTUAL PROPERTY
COLLABORATIVE DYNAMICS IN AFRICA
Editors: Jeremy de Beer, Chris Armstrong, Chidi Oguamanam & Tobias Schonwetter

# Innovation & Intellectual Property
## Collaborative Dynamics in Africa

EDITORS:
JEREMY DE BEER, CHRIS ARMSTRONG,
CHIDI OGUAMANAM AND TOBIAS SCHONWETTER

Published by UCT Press in association
with the IP Unit, Faculty of Law,
University of Cape Town (UCT) and
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).



*Innovation & Intellectual Property: Collaborative Dynamics in Africa*
First published 2014 by UCT Press

an imprint of Juta and Company Ltd
First floor, Sunclare Building

21 Dreyer Street
Claremont, 7708
South Africa
www.uctpress.co.za

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This book is published by UCT Press. This work was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada, with financial support from the German Federal Ministry for Economic Cooperation and Development (BMZ), and in cooperation with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

ISBN: 978-1-91989-599-4 (Parent)
ISBN: 978-1-77582-143-4 (EBPUB)
ISBN: 978-1-77582-142-7 (WebPDF)
ISBN: 978-1-77582-183-0 (WebPDF Chapter 6)

Project manager: Glenda Younge
Editor: Daphne Burger
Proofreader: Alfred LeMaitre
Indexer: Ethné Clarke
Cover designer: Farm Design

Typeset in 10.5 pt on 13 pt Minion Pro by: Integra
Printed and bound in the Republic of South Africa by Creda Communications
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This book has been independently peer-reviewed by academics who are experts in the field.

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# Preface

This book is among the key outputs of the Open African Innovation Research and Training (Open A.I.R.) Project. Based on case study research in nine African countries, the book examines the recent history and current on-the-ground realities of innovation and intellectual property (IP) in African settings. In doing so, the book reveals complex collaborative dynamics across a range of different countries, sectors and socio-economic contexts, and generates recommendations for how innovation and IP can be married with social and economic development objectives in African settings. This book's sister report, *Knowledge and Innovation in Africa: Scenarios for the Future,* situates the current realities covered in this book within a much longer historical trajectory and multiple potential futures.

Conceived in 2009, established in 2010 and launched in 2011, Open A.I.R. is a pan-African and globally interconnected research and training network, which was established to:

- raise IP awareness in African settings and facilitate critical policy engagement;
- empower a networked, epistemic IP community in Africa;
- identify IP-related innovation bottlenecks and modes of open collaboration; and
- interrogate IP-related innovation metrics, capital and power structures.

Open A.I.R. is financially supported by Canada's International Development Research Centre (IDRC) and Germany's Federal Ministry for Economic Cooperation and Development (BMZ), and collaborates with numerous other organisations and individuals – all of whom are recognised in the Acknowledgements' pages of this book. In addition to the aforementioned case study and foresight research, the Open A.I.R. network engages in a wide range of training, capacity building, outreach and policy engagement activities – both on the African continent and in settings outside the continent where matters of African innovation and IP are engaged. These engagements target external stakeholders capable of changing policies and practices, including:

- innovators, creators and entrepreneurs – individuals and companies;
- business groups such as chambers of commerce and industry associations;
- national, regional and international law-makers and policy-makers;
- issue leaders, such as politicians, judges, professors and practitioners;
- scientific and cultural research and development funding bodies;

- university researchers, administrators and technology transfer officials;
- rights-holders and collective rights management organisations; and
- representatives of indigenous and local communities.

Open A.I.R. is motivated by a vision in which innovation and creativity in Africa are sustainable, properly valued, collaborative, widely accessible and result in benefits that are distributed throughout society. Based on this vision, the network's mission is to better understand how innovation and IP processes work in African settings, how knowledge and technology currently protected by IP can be mobilised, and how IP systems can be harnessed or adapted in a manner that fosters openness-oriented collaborative innovation resulting in just distribution of new knowledge and technology.

This book and the *Scenarios* volume are two parts of a much broader attempt, by Open A.I.R. and other initiatives, to facilitate, in the medium to long term, the emergence of new, pragmatic means of valuing and facilitating innovation and creativity in Africa. Contextually appropriate metrics sensitive to the monitoring of meaningful changes in behaviour around innovation and creativity could be instrumental for promoting African grassroots entrepreneurship, broad-based business development, and a vibrant private sector built on small and medium-sized enterprises (SMEs) with a sustained ability to innovate. And the opportunities for innovation-driven SMEs could also benefit from policy-maker adoption of appropriate metrics when designing the policy and regulatory frameworks necessary to ensure predictable innovation environments for stakeholders.

Open A.I.R.'s core funders, IDRC and BMZ, have provided a framework for Open A.I.R.'s objectives. Open A.I.R. fits within the IDRC's Science and Innovation programme, which supports research and policy engagement in relation to how science, technology and innovation (STI) can be engines of socio-economic development. Within this programme, the Information and Networks (I&N) initiative, which funds the Open A.I.R. Project, aims to better understand the linkages among innovation, creativity, networked collaborations (often enabled via information and communication technologies [ICTs]), and determinants of openness – including IP rights. The IDRC also supported the precursor network to Open A.I.R., the African Copyright and Access to Knowledge (ACA2K) Project, which ran from 2007 to 2011 and generated the nucleus of the expert network now driving Open A.I.R.

BMZ supports Open A.I.R. via Germany's Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), under the GIZ commons@ip – Harnessing the Knowledge Commons for Open Innovation initiative**.** The commons@ip initiative focuses on how IP rights interact with open innovation, the knowledge commons, open licences and collaborative innovation. It is part of the BMZ-

mandated Train for Trade programme, which aims at strengthening the private sector and its constituent bodies in the Southern African Development Community (SADC) region through training and capacity building in export promotion, quality control and promotion of open innovation – as well as through promotion of local and regional economic development and trade.

Open A.I.R.'s training and capacity building components include:

- building the network's capacity – through online platforms, network-wide workshops, research methodology support, scenario-building meetings and thematic seminars;
- awarding Open A.I.R. Fellowships to emerging IP scholars and potential leaders – from Tanzania, Kenya, Uganda, Ethiopia, Cameroon, Nigeria and Egypt;
- exchanging knowledge through Africa-wide and South–South knowledge networking at seminars, workshops and conferences;
- growing awareness among African creators, innovators, entrepreneurs and policy-makers of openness-oriented approaches to innovation and IP matters in Africa; and
- teaching at African tertiary educational institutions, including development of a replicable, open course curriculum on IP law and development.

Because of the immense geographic size of the African continent, and unique logistical challenges of African intra-continental travel, ICTs have been instrumental in empowering the research network's "community of practice". Open A.I.R. has an offline presence in 14 African countries and in multiple countries outside the continent. Online, the network includes hundreds of individuals and institutions throughout Africa and from all corners of the globe, linked via a suite of online networking and social-media tools. The Open A.I.R. community of practice advances a culture of multidirectional exchange among African innovative and creative communities and external actors – with a view to sustainably empowering local communities and SMEs. Network members promote cross-fertilisation of ideas via original thinking and partnerships with national and international institutions, scholars, funding agencies, civil society organisations and other willing partners. Those wishing to join the community can visit http://www.openair.org.za/join.

# Acknowledgements

True to its emphasis on "collaborative dynamics", this book is the product of the collective energy of dozens of people and institutions in many countries, all of whom work within the Open African Innovation Research and Training (Open A.I.R.) network. Open A.I.R. currently has core network members and institutions in 14 African countries, spanning North Africa (Egypt, Tunisia), West Africa (Senegal, Ghana, Nigeria, Cameroon), East Africa (Ethiopia, Uganda, Kenya, Tanzania) and southern Africa (Malawi, Mozambique, Botswana and South Africa). Other network members and institutions are in Canada, the United States, the United Kingdom, Germany and France. These members are, in turn, linked – via online and offline interactions – to a broader Open A.I.R. network of hundreds of individuals and institutions, including people and entities in Brazil, India, Malaysia, Australia, Switzerland and the Netherlands. The network receives generous financial support from Canada's International Development Research Centre (IDRC) and Germany's Federal Ministry for Economic Cooperation and Development (BMZ).

Each of the editors and authors of this volume is part of, and collaboratively exchanges knowledge and expertise with, this large network, and we the editors, and each of the contributors, are profiled in "About the Editors" and "About the Contributors" sections of this book and on the Open A.I.R. website's Team page, http://www.openair.org.za/content/open-air-team. On this Team page, one can also find the names and contact details of Open A.I.R. Fellows and other network members and institutions. The network is also accessible via its social media platforms, featured at http://www.openair.org.za/join

Open A.I.R.'s administrative hub is the IP Unit in the University of Cape Town Faculty of Law, where Project Manager Nan Warner and Administrator Phyllis Webb are the key operational drivers. Warner and Webb receive management support from two of the editors of this book (and the co-Principal Investigators of the Open A.I.R. Project), UCT IP Unit Director Tobias Schonwetter and Jeremy de Beer of the University of Ottawa Faculty of Law. Also supporting project management are Julie Nadler-Visser of UCT's Research Contracts and IP Services (RCIPS) unit, members of the UCT Finance Department and Faculty of Law Finance Department, and another editor of this book: Chris Armstrong of the LINK Centre at the University of the Witwatersrand (Wits) in Johannesburg.

Network strategic guidance is provided by a Steering Committee composed of De Beer, Schonwetter, Warner, Chidi Oguamanam (another of this book's

editors) of the University of Ottawa Faculty of Law, Nagla Rizk of The American University in Cairo (AUC), Sisule Musungu of IQsensato in Nairobi, Khaled Fourati of the IDRC office in Cairo, and Balthas Seibold of Germany's Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in Bonn. Further strategic support from the IDRC is, or has been, provided by Naser Faruqui, Simon Carter, Laurent Elder, Fernando Perini, Matthew Smith, Heloise Emdon and Phet Sayo; Karim Badran and Rose-Marie Ndiaye Pereira on financial matters; and Michelle Hibler and Nola Haddadian on publications. GIZ's involvement is focused on the capacity-building components of the network, which are carried out in collaboration with the GIZ's commons@ip – Harnessing the Knowledge Commons for Open Innovation initiative. At GIZ, in addition to support from the aforementioned Steering Committee member Balthas Seibold, who advises on matters of international knowledge cooperation and networking, support has also come from Petra Hagemann, Christine de Barros Said, Ursula van Look, Marina Neuendorff, Margrit Brockhaus and the Working Group of German Development Organisations on Promoting Innovation Systems. At UCT, as well as those already mentioned, key supporters and collaborators have been the Dean of Law, PJ Schwikkard, Lee-Ann Tong in the Faculty of Law, and, in the IP Unit, the Unit's founder Julian Kinderlerer, its Deputy Director Caroline Ncube and its Senior Research Fellow Bernard Maister. At the University of Ottawa, in addition to those already mentioned, support has been provided by the Dean of the Faculty of Law, Common Law Section, Nathalie Des Rosiers, and Former Dean Bruce Feldthusen.

For this book, key network participants were the team of JD candidates in the University of Ottawa Faculty of Law – Lukas Frey, Will Sapp, Phil Holdsworth, Maya Boorah, Kristen Holman and Saara Punjani – who provided long hours of diligent editorial assistance. In addition, because the research case studies presented in this book all required collection of data from human subjects – via interviews and/or focus group discussions and/or written surveys – this book would not have been possible without the cooperation of dozens of respondents across the countries of study. For reasons of confidentiality, most survey and interview respondents are not named in this book, but we are sincerely grateful for their contributions. Also contributing to the research outlined in this book was Donna Podems of OtherWISE in Cape Town, who advised on research methodologies and supported a methodology workshop for several of the authors featured in this volume, in addition to her support of Open A.I.R.'s monitoring and evaluation (M&E) framework. At this book's publisher, UCT Press, the key drivers have been Publisher Sandy Shepherd and Project Manager Glenda Younge. The cover design for this volume is by Elsabe Gelderblom of Farm Design in Cape Town, who does all of Open A.I.R.'s design work for its website, social media tools, PR materials,

*Briefing Notes* and the network's other substantial publication output, the Open A.I.R. *Scenarios* compendium – which is available in hard-copy, and on the Open A.I.R. website, as a separate published output and companion to this book.

Network headquarters at the UCT IP Unit serves as Open A.I.R.'s Southern Africa Hub, coordinated by Project Manager Warner. There are also four other Hubs: the North Africa Hub at the Access to Knowledge for Development Center (A2K4D) of the School of Business at The American University in Cairo (AUC), coordinated by Nagham El Houssamy under the direction of Nagla Rizk; the West Africa Hub at the Nigerian Institute of Advanced Legal Studies (NIALS) in Lagos, coordinated by Helen Chuma-Okoro under the direction of Adebambo Adewopo; the East Africa Hub at the Centre for IP and IT Law (CIPIT) of Strathmore University, Nairobi, coordinated by CIPIT Director Isaac Rutenberg; and the Canada Hub at the University of Ottawa Faculty of Law, coordinated by De Beer and Oguamanam. Contact can be made with these Hubs and Hub Coordinators via the aforementioned Open A.I.R. website Team page.

Also integral to the success of the network are its nine Fellows, each of whom has spent time at the UCT IP Unit in Cape Town. The Fellows have contributed to Open A.I.R.'s case study and foresight research, to outreach and training work, and to building the network. The nine Fellows are: Esther Ngom of the Ngo Nyemeck law firm in Yaoundé; Seble Baraki of the Justice and Legal System Research Institute (JLSRI) in Addis Ababa; Moses Mulumba of the Centre for Health, Human Rights and Development (CEHURD) in Kampala; Douglas Gichuki of CIPIT in Nairobi; Milton Lore of Bridgeworks Africa in Nairobi; Eliamani Laltaika of the Tanzania Intellectual Property Rights Network (TIP-Net) in Dar es Salaam; Alexandra Mogyoros, a student in the Faculty of Law at the University of Ottawa; West Africa Hub Coordinator Helen Chuma-Okoro of NIALS in Lagos; and North Africa Hub Coordinator Nagham El Houssamy of A2K4D in Cairo.

Other collaborating institutions are the Program on Information Justice and Intellectual Property (PIJIP) at the Washington College of Law at American University in Washington, DC; the Centre for Technology and Society (CTS) in Brazil; the Centre for Internet and Society (CIS) in India; and the Open Society Foundations, where Open A.I.R.'s key partner is Vera Franz. The Open A.I.R. network has also benefited from interaction with staff at the World Intellectual Property Organisation (WIPO) headquarters in Geneva. In London, Shirin Elahi of Scenarios Architecture is the driver of Open A.I.R. foresight research work, as featured in the aforementioned *Scenarios* compendium that provides an important forward-looking complement to the current picture offered by this volume. Jo Higgs of Go Trolley Films in Cape Town did post-production on the videos available on the Open A.I.R. YouTube channel – videos which show how the network came into being and how the research was conceptualised.

All the people and institutions mentioned here have in one way or another played a role, by collaborating within the Open A.I.R. network, in the conceptualisation, planning, data collection, data analysis, writing, editing, design and production processes that resulted in successful research and the completion of this book. It is hoped that this volume's free availability online, under a Creative Commons (CC) licence, will ensure that the book's collaborative dynamics do not end here at the moment of publication, and continue long into the future in the work of the still-growing Open A.I.R. community.

*Jeremy de Beer, Chris Armstrong, Chidi Oguamanam, Tobias Schonwetter*
*September 2013*

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# Acronyms and Abbreviations

| | |
|---|---|
| A2K | access to knowledge |
| A2K4D | Access to Knowledge for Development Center (The American University in Cairo, Egypt) |
| AAU | Addis Ababa University |
| ABS | access and benefit-sharing |
| ACA2K | African Copyright and Access to Knowledge Project |
| ACP | African, Caribbean and Pacific Group of States |
| ACTS | African Centre for Technology Studies (Kenya) |
| ADPP | Ajuda de Desenvolvimento de Povo para Povo (Mozambique) |
| AERC | African Economic Research Consortium |
| AFTE | Association for the Freedom of Thought and Expression (Egypt) |
| AGOA | African Growth and Opportunity Act |
| AIM | Agência de Informação de Moçambique |
| AmCham | American Chamber of Commerce (Egypt) |
| ARC | Aquaculture Research Centre (Egypt) |
| ARIPO | African Regional Intellectual Property Organisation |
| ASSAf | Academy of Sciences of South Africa |
| ASTII | African Science, Technology and Innovation Indicators |
| ATO | alternative trading organisation |
| ATPC | African Trade Policy Centre |
| ATPS | African Technology Policy Studies Network |
| AU | African Union |
| AUC | The American University in Cairo |
| B-BBEE Act | Broad-Based Black Economic Empowerment Act 53 of 2003 (South Africa) |
| BCP | bio-cultural community protocol |
| BIH | Botswana Innovation Hub |
| BMZ | Federal Ministry for Economic Cooperation and Development (Germany) |
| BoI | Bank of Industry (Nigeria) |
| BOTEC | Botswana Technology Centre |
| BPR | business process re-engineering |
| CAA | Cocoa Abrabopa Association (Ghana) |
| CARICOM | Caribbean Community |
| CBD | Convention on Biological Diversity |
| CBN | Central Bank of Nigeria |

| | |
|---|---|
| CC | Creative Commons |
| CCIA | Computer and Communications Industry Association |
| CEDAT | College of Engineering, Design, Art and Technology (Makerere University, Uganda) |
| CEHURD | Centre for Health, Human Rights and Development (Uganda) |
| CEPIL | Centre for Public Interest Law (Ghana) |
| CIGI | Centre for International Governance Innovation |
| CIPC | Companies and Intellectual Property Commission (South Africa) |
| CIPIT | Centre for IP and IT Law (Strathmore University, Kenya) |
| CIPO | Canadian Intellectual Property Office |
| CIPR | Commission on Intellectual Property Rights (UK) |
| CMO | collective management organisation |
| COCOBOD | Ghana Cocoa Board |
| CPD | Centre for Policy Dialogue (Nigeria) |
| CRTT | Centre for Research in Transportation Technologies (Makerere University, Uganda) |
| CSIR | Council of Scientific and Industrial Research (India) |
| CTEA | Copyright Term Extension Act (US) |
| CVCP | Committee of Vice-Chancellors and Principals (UK) |
| DACST | Department of Arts, Culture, Science and Technology (South Africa) |
| DEST | Department of Education, Science and Training (Australia) |
| DFID | Department for International Development (UK) |
| DHET | Department of Higher Education and Training (South Africa) |
| DNS | domain name system |
| DRC | Democratic Republic of Congo |
| DRM | digital rights management |
| DRST | Department of Research, Science and Technology (Botswana) |
| DST | Department of Science and Technology (South Africa) |
| DTI | Department of Trade and Industry (South Africa) |
| EAEP | East African Educational Publishers (Kenya) |
| EC | European Commission |
| ECBP | Engineering Capacity Building Program (Ethiopia) |
| ECOWAS | Economic Community of West African States |
| ECX | Ethiopia Commodity Exchange |
| EEAA | Egyptian Environmental Affairs Agency |
| EIPO | Ethiopian Intellectual Property Office |
| EIPRL | Egyptian Intellectual Property Rights Law |
| EPA | Environmental Protection Authority (Ethiopia) |
| EPO | European Patent Office |
| EST | environmentally sound technology |

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| EU | European Union |
| EUEI | EU Energy Initiative |
| Eurostat | Statistical Office of the European Communities |
| FAO | UN Food and Agriculture Organisation |
| FCN | Friendship, Commerce and Navigation (Kenya) |
| FDI | foreign direct investment |
| FDRE | Federal Democratic Republic of Ethiopia |
| FDSE | Free Day Secondary Education (Kenya) |
| FES | Friedrich Ebert Stiftung (Germany) |
| FLO | Fairtrade Labelling Organisations International |
| FOSS | free and open source software |
| FPE | Free Primary Education (Kenya) |
| FTA | free trade agreement |
| GDP | gross domestic product |
| GEM | Global Entrepreneurship Monitor |
| GERD | gross expenditure on research and development |
| GI | geographical indication |
| GIPC | Global Intellectual Property Center |
| GIZ | Deutsche Gesellschaft für Internationale Zusammenarbeit (Germany) |
| GM | genetically modified |
| GOAN | Ghana Organic Agriculture Network |
| GOK | Government of Kenya |
| GR | genetic resources |
| GTZ | German Technical Cooperation |
| HSRC | Human Sciences Research Council (South Africa) |
| ICANN | Internet Corporation for Assigned Names and Numbers |
| ICIDSS | International Creativity and Innovation Development Support Services (Ethiopia) |
| ICJ | International Commission of Jurists |
| ICLS | International Conference of Labour Statisticians |
| ICPSK | Institute of Chartered Public Secretaries of Kenya |
| ICT | information and communication technology |
| ICT4D | ICT for development |
| ICTSD | International Centre for Trade and Sustainable Development |
| IDC | Industrial Development Corporation (South Africa) |
| IDLO | International Development Law Organisation |
| IDRC | International Development Research Centre (Canada) |
| IDS | Institute of Development Studies (Kenya) |
| IE | informal economy |

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| IFC | International Finance Corporation |
| IICA | Inter-American Institute for Cooperation on Agriculture |
| IIDMM | Institute of Infectious Disease and Molecular Medicine (South Africa) |
| IIED | International Institute for Environment and Development |
| IIPA | International Intellectual Property Alliance |
| IISD | International Institute for Sustainable Development |
| ILC | indigenous and local community |
| ILO | International Labour Organisation |
| INAO | Institut national des appellations d'origine (France) |
| IP | intellectual property |
| IPA | Industrial Property Act (Botswana) |
| IPC | International Patent Classification |
| IPI | Industrial Property Institute (Mozambique) |
| IPR-PFRD Act | Intellectual Property Rights from Publicly Financed Research and Development Act (South Africa) |
| IRB | Institutional Review Board (Botswana) |
| IRENA | International Renewable Energy Agency |
| ISAS | integrated seawater agriculture system |
| ISCTEM | Instituto Superior de Ciências e Tecnologia de Moçambique |
| ISI | Institute for Scientific Information |
| ISO | International Organisation for Standardisation |
| ISP | Information Society Project (Yale University, US) |
| ITC | International Trade Centre |
| JBEDC | Japan Bio-Energy Development Corporation |
| JITAP | Joint Integrated Technical Assistance Programme |
| JLSRI | Justice and Legal System Research Institute (Ethiopia) |
| K2C Biosphere | Kruger to Canyons Biosphere (South Africa) |
| KE | knowledge economy |
| KECOBO | Kenya Copyright Board |
| KENFAA | Kenya Nonfiction and Academic Authors' Association |
| KES | Kenyan Shilling |
| KHA | Kenya Historical Association |
| KICD | Kenya Institute of Curriculum Development |
| KIPI | Kenya Industrial Property Institute |
| KIPPRA | Kenya Institute for Public Policy Research and Analysis |
| KNAS | Kenya National Academy of Sciences |
| KOLA | Kenya Oral Literature Association |
| KTO | knowledge transfer office |
| LBC | Licensed Buying Company (Ghana) |
| LDC | least developed country |

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| LE | Egyptian Pound |
| LINK Centre | Learning Information Networking Knowledge Centre (Wits University, South Africa) |
| LSK | Law Society of Kenya |
| MAN | Manufacturers Association of Nigeria |
| MANCAP | Mandatory Conformity Assessment Programme (Nigeria) |
| MCH | Maasai Cultural Heritage Organisation (Kenya) |
| MCST | Ministry of Communications, Science and Technology (Botswana) |
| MCT | Ministério da Ciência e Tecnologia (Mozambique) |
| MDCA | Malindi District Cultural Association (Kenya) |
| MDG | Millennium Development Goal |
| MEA | Multilateral Environmental Agreement |
| MIST | Ministry of Infrastructure, Science and Technology (Botswana) |
| MIT | Massachusetts Institute of Technology |
| MOA | Ministry of Agriculture (Ethiopia) |
| MOE | Ministry of Education (Ethiopia) |
| MOFA | Ministry of Food and Agriculture (Ghana) |
| MoFED | Ministry of Finance and Economic Development (Ethiopia) |
| MOST | Ministry of Science and Technology (Ethiopia) |
| MoU | memorandum of understanding |
| MRC | Medical Research Council (South Africa) |
| Natoil | Natural Oil Company (Egypt) |
| NACI | National Advisory Council on Innovation (South Africa) |
| NCC | Nigerian Copyright Commission |
| NDA | non-disclosure agreement |
| NEP | National Enquiry Point (Botswana) |
| NEPAD | New Partnership for Africa's Development |
| NESC | National Economic and Social Council (Kenya) |
| NESTI | National Experts on Science and Technology Indicators |
| NIALS | Nigerian Institute of Advanced Legal Studies |
| NRF | National Research Foundation (South Africa) |
| NGO | non-governmental organisation |
| NIALS | Nigerian Institute of Advanced Legal Studies |
| NIPMO | National Intellectual Property Management Office (South Africa) |
| NIS | national innovation system |
| NMIMS | Narsee Monjee Institute of Management Studies (India) |
| NPR | National Public Radio (US) |
| NPSB | National Policy and Strategy on Biofuels (Mozambique) |
| NRC | National Research Centre (Egypt) |

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| NREA | New and Renewable Energy Authority (Egypt) |
| NWLR | Nigerian Weekly Law Report |
| OA | open access |
| OAPI | Organisation africaine de la propriété intellectuelle |
| OCEES | Oxford Centre for the Environment, Ethics and Society |
| OCFCU | Oromia Coffee Farmers Cooperative Union (Ethiopia) |
| ODEL | open, distance and electronic learning |
| ODI | Overseas Development Institute (UK) |
| OECD | Organisation for Economic Co-operation and Development |
| OER | open educational resource |
| Open A.I.R. | Open African Innovation Research and Training Project |
| ORD | Office of Research and Development (Botswana) |
| PBIP | place-based intellectual property |
| PCT | Patent Cooperation Treaty |
| Petromoc | Petróleos de Mozambique |
| PIIPA | Public Interest Intellectual Property Advisors (US) |
| PIJIP | Program on Information Justice and Intellectual Property (American University, US) |
| PPS | probability proportional to size |
| PRO | public research organisation |
| ProBEC | Programme for Basic Energy and Conservation in Southern Africa |
| R&D | research and development |
| RCIPS | Research Contracts and IP Services unit (UCT, South Africa) |
| RIPCO (B) | Rural Industrial Promotion Company (Botswana) |
| RMI | rights management information |
| SADC | Southern African Development Community |
| SARUA | Southern African Regional Universities Association |
| SCE | Society for Critical Exchange (Kenya) |
| SID | Society for International Development (Kenya) |
| SINER-GI | Strengthening International Research on Geographical Indications |
| SME | small and medium enterprise |
| SMIEIS | Small and Medium Industries Equity Investments Scheme (Nigeria) |
| SMME | small, micro and medium enterprise |
| SNA | social network analysis |
| SON | Standards Organisation of Nigeria |
| SPS | sanitary and phytosanitary measures |
| STCI | Science and Technology Capacity Index |
| STEP | Science Technology and Economic Policy (US) |
| STI | science, technology and innovation |
| STS | Society for Technology Studies (Ethiopia) |

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| SVKM | Shri Vile Parle Kalamani Mandal (India) |
| TBT | technical barriers to trade |
| TCE | traditional cultural expression |
| TGE | Transitional Government of Ethiopia |
| THE | Times Higher Education (UK) |
| THRIP | Technology and Human Resources Programme (South Africa) |
| TIA | Technology Innovation Agency (South Africa) |
| TIP-Net | Tanzania Intellectual Property Rights Network |
| TISC | Technology and Innovation Support Center |
| TK | traditional knowledge |
| TKDL | Traditional Knowledge Digital Library (India) |
| TPMs | technological protection measures |
| TRIPS | Agreement on Trade-Related Aspects of Intellectual Property Rights |
| TTO | technology transfer office |
| TVET | Technical and Vocational Education and Training (Ethiopia) |
| UB | University of Botswana |
| UCC | Universal Copyright Convention |
| UCITA | Uniform Computer Information Transactions Act (US) |
| UCT | University of Cape Town (South Africa) |
| UEM | Eduardo Mondlane University (Mozambique) |
| UGT | Uganda Gatsby Trust |
| UK | United Kingdom |
| UM | utility model |
| UNCST | Uganda National Council for Science and Technology |
| UNCTAD | UN Commission on Trade and Development |
| UNDESA | UN Department of Economic and Social Affairs |
| UNDP | UN Development Programme |
| UNECA | UN Economic Commission for Africa |
| UNEP | UN Environment Programme |
| UNESCAP | UN Economic and Social Commission for Asia and the Pacific |
| UNESCO | UN Educational, Scientific and Cultural Organisation |
| UNFCCC | UN Framework Convention on Climate Change |
| UNICAMP | University of Campinas (Brazil) |
| UNIDO | UN Industrial Development Organisation |
| Unilag | University of Lagos |
| US | United States |
| USAID | US Agency for International Development |
| USPTO | US Patent and Trademark Office |
| WAK | Writers Association of Kenya |
| WATH | West Africa Trade Hub |

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| WBCSD | World Business Council for Sustainable Development |
| WCT | WIPO Copyright Treaty |
| WEF | World Economic Forum |
| WEP | World Employment Programme |
| WHO | World Health Organisation |
| WIPO | World Intellectual Property Organisation |
| Wits | University of the Witwatersrand (South Africa) |
| WPIS | WIPO Patent Information Service |
| WPPT | WIPO Performances and Phonograms Treaty |
| WTO | World Trade Organisation |
| ZAR | South African Rand |

# Chapter 6

# The Policy Context for a Commons-Based Approach to Traditional Knowledge in Kenya

*Marisella Ouma*

## Abstract

*This chapter outlines research into the policy context for a commons approach to traditional knowledge (TK) in Kenya. The TK commons concept on which the research study was premised addresses protection, preservation, access, terms of use, licensing and benefit-sharing. The research examined the Constitution of Kenya, the National TK Policy, the Draft TK Bill, and intellectual property (IP) laws that provide a basis for a legal and policy framework for a TK commons in Kenya. The research sought to determine the degree to which existing law and policy in Kenya, along with reform proposals, have the potential to support a commons approach to TK management. The chapter assesses the degree to which such laws, policies and proposals might be able to protect the interests of indigenous and local communities (ILCs) in Kenya who hold TK, while at the same time promoting collaborative, networked "open development" objectives. The chapter argues that previous initiatives, such as a project to produce a digital archive documenting Maasai knowledge, have laid the groundwork for positive initiatives in support of a TK commons. However, a lack of collaboration between ILCs and Kenyan governmental organisations has left this potential unrealised. The chapter provides recommendations for,* inter alia, *how to improve collaboration between government and ILCs.*

## 1. Introduction

Until recently, formal protection of intellectual property (IP) in African countries primarily addressed conventional IP – copyright, patents and trademarks. The emerging emphasis is on enforcement of IP according to minimum standards that have been set out in international instruments such as the World Trade Organisation (WTO) Agreement on Trade-Related Aspects of Intellectual

Property Rights (TRIPS). Against this backdrop, a fundamental question is whether existing IP policy frameworks facilitate open innovation and creativity in Africa. Of particular interest to this author, and the focus of this chapter, is the degree to which creativity and innovation in relation to a different form of IP, traditional knowledge (TK), is being catered for by IP policy instruments (Bergy, 2011).

There has tended to be a presumption that TK (including traditional cultural expressions [TCEs] and folklore, as well as traditional medicinal, ecological and other knowledge) is knowledge that is in the public domain and, thus, available to all. However, the reality is that indigenous and local communities (ILCs) who are the custodians of TK have systems of customs and taboos in place to ensure that certain TK is not made widely known, while at the same time is preserved and passed on from one generation to the next within the ILC. In the case of traditional medicine, for instance, specific families or persons, such as the *olaibon* among the Maasai in East Africa, hold knowledge and put it into practice. Such knowledge preservation systems can also be found in relation to genetic resources. In the case of music, specific composers within ILCs are often rewarded for their creativity by being recognised as custodians of the compositions. Certain forms of artwork and design often *belong* to certain members of ILCs. Many types of TK held by ILCs in Kenya, and in East Africa more generally, are thus kept within the custody of a selected few, to the exclusion of all others.

There is increasing interest in matters of law and policy in relation to TK, particularly TK in biological resources and in cultural goods. This heightened focus on TK policy is due to, among other things, evidence of increased commercialisation of TK in agricultural, pharmaceutical and cosmetic industries, as well as in creative industries such as visual art and design, performance and music. There have been numerous documented examples of third parties unscrupulously misappropriating TK, resulting in suspicion and mistrust between ILCs and third parties, posing obstacles to potentially beneficial partnerships.[1]

The need for appropriate policy instruments is twofold. On one hand, there is a need to limit practices whereby TK commercialisation takes place without the consent of the custodians or holders of the TK, and without benefits accruing to them (Tingoi, n.d.[a]). On the other hand, there is a need to ensure that the TK holders are able to exploit the knowledge to its full potential. TK is often not documented but passed on orally from generation to generation, and this can limit access to, or dissemination of, knowledge. In some cases, the TK can be lost forever.

1 For further reading, see Edmonds Institute and African Centre for Biosafety (2006) and Society for Critical Exchange (SCE) (2004).

Policy approaches are needed that can enhance ILCs' control over commercialisation and exploitation of their TK and restore ILCs' confidence in the communal spirit of TK-sharing. It is this author's view that legal policy instruments should seek to enhance communal approaches to TK protection and management, via enabling environments for documentation and value enhancement practices that can ensure the perpetuity and dynamism of ILCs' TK. One such approach would be to support formalisation of TK "commons" structures – structures whereby commonly held TK is shared and preserved within an ILC in a manner guided by an agreed instrument giving a measure of formality and enforceability to the ILC's TK commons.

Among the elements of the potential dynamism of TK that this author is concerned with is the potential for TK – when governed according to TK commons principles – to increasingly make information available to third parties for purposes not only of commercialisation and benefit-sharing, but also broader collaboration for socio-economic development – a collaborative developmental dynamic that has begun to be conceptualised in the development literature as "open development" (Smith *et al.,* 2011). The open development concept views networked, collaborative relationships – often enabled by information and communication technology (ICT) platforms – as integral to sustainable socio-economic development.

This chapter outlines the findings from a Kenyan research study into the degree to which Kenyan TK commons modalities are effectively catered for by existing international and Kenyan national legal and policy mechanisms. The study was premised on the assumption, grounded in the open development concept, that it is necessary to have a legal and policy environment for TK that can balance TK custodians' complex mix of social and economic needs (knowledge-sharing and preservation, knowledge protection, controlled knowledge exploitation and benefit-sharing) while at the same time fostering increased dynamism within the custodians' already-implicit TK commons – dynamism whereby TK-based creativity, innovation and open development can be optimised by the TK holders.

Among the contemporary commons-based approaches to TK are ICT-based efforts to digitally document TK in a manner that enhances preservation and equitable exploitation while at the same time encouraging follow-on innovation. In India, for instance, the Council of Scientific and Industrial Research (CSIR) has developed a digital database, the Traditional Knowledge Digital Library (TKDL), which captures information on India's existing TK. The information in the TKDL is used, among other things, by patent offices to verify applications based on Indian TK, especially in the area of pharmaceuticals.[2] This database model is currently under investigation by Kenyan government agencies.

2 For more information on India's TKDL, see Council of Scientific and Industrial Research (CSIR) (n.d.).

## 2. The research

The main research question the study sought to answer was: *How and to what extent does the Kenyan legal and policy environment cater to the creation and implementation of TK commons modalities conducive to open innovation and collaborative creativity?* The core research question raised the following sub-questions:

- What are the existing laws and policies in Kenya in relation to access to TK?
- Which laws and policies exist in Kenya to ensure perpetuity and third-party access to TK?
- How do relevant actors, such as the government, universities, research institutions and TK holders, contribute to TK commons modalities?
- What are the actual or potential roles of ICTs in TK commons modalities?

The study analysed:

- the existing legal and policy framework for the protection of TK in Kenya and how it potentially affects or contributes to TK commons structures among ILCs;
- the potential role of Kenyan policy actors in fostering an enabling environment for TK commons modalities in Kenya; and
- the potential role and impact of the digital environment in support of Kenyan TK commons practices.

Data were collected via library and online research, and via qualitative focus group discussions and interviews. The library and online research looked at national, regional and international papers, articles and stakeholder reports on TK protection and TK commons modalities. Also examined were provisions related to TK in the Constitution of Kenya, Kenyan Acts of Parliament, national policies and relevant international legal instruments in the context of IP protection of TK. Qualitative research consisted of practically oriented discussions with policy actors, to gauge understanding of the concept of a TK commons, with the policy actors drawn from ILCs, government, research institutions and universities. Focus groups and interviews were carried out between May and July 2011.

First, the research identified two communities to engage in the study, namely, the Maasai and Miji Kenda communities. The Maasai community was selected because it is the site of a project, supported by the World Intellectual Property Organisation (WIPO), on digitisation of the Maasai culture (which touches on the issue of documentation of TK). The Miji Kenda community was selected

based on the work that has been done by the Malindi District Cultural Association (MDCA) to formalise the custody and continuity of the Miji Kenda TK. Of particular interest was to get a sense of the Miji Kenda community's views on the potential impact of ICTs on solidification of its TK commons. Next, the research team conducted focus group discussions with potential policy actors and elders within the two communities, primarily via the MDCA and the Maasai Cultural Heritage Organisation (MCH).

Interviews were then carried out with representatives of various institutions involved in policy creation and implementation at the national level, including the Office of the Attorney-General and the Department of Justice, the Kenya Copyright Board (KECOBO), the Department of Culture, the Kenya Industrial Property Institute (KIPI), the University of Nairobi and National Museums of Kenya. The focus groups and interviews were semi-structured to ensure flexibility and to allow for purposive identification of additional interviewees.

The next section (Section 3) outlines the research study's conceptual framing in relation to notions of TK and commons modalities. Section 4 outlines the study's findings regarding the Kenyan legal and policy environment. Section 5 provides and analyses the research findings from the qualitative focus group discussions and interviews. Section 6 draws conclusions based on the study findings. (See Chapter 7 in this volume for discussion of the dynamics of an existing TK commons that has been set up by traditional medicinal practitioners in the Bushbuckridge region of South Africa.)

## 3. Conceptual framework

The term "traditional knowledge" does not have a universally accepted definition. Some believe this is due to the diversity of traditions and culture at both the domestic and international levels (WIPO, 2001). Several attempts have been made to define TK (which, for the purposes of this study, included primarily TCEs and folklore).[3] TK is diverse, dynamic and varies from community to community. One study by Ostrom (1990) revealed that TK has a strong cultural and socio-economic impact on ILCs. The main challenge lies in the documentation and preservation of TK, and is well summed up in the words of a member of the Maasai community in Kenya: "When an elder dies, it's just

3 See, for instance, Article 7(II), Brazil's Provisional Measure No. 2.186-16, available at: www.wipo.int/wipolex/en/details.jsp?id=5897 (accessed 10 April 2013); Article 3(1), Portugal's Decree-Law No. 118/2002, available at: www.wipo.int/wipolex/en/details.jsp?id=5897 (accessed 10 April 2013); and Hansen and Van Fleet (2003).

like a light burning out, so we want to get that knowledge before this generation goes" (Tingoi, n.d.[b]). The challenge of documenting and preserving TK is exacerbated by the typically low literacy levels among the communities who are custodians of the knowledge.

The concept of a "commons" derives from the idea of community ownership of property (*res communes*), founded on the principle that certain resources and things, tangible and intangible, are owned and shared by a community as a network of people and guided by a predetermined set of rules and regulations that sets the boundaries and limitations of such use. There are different kinds of commons, including a material commons, a social commons (Nonini, 2007) and a knowledge commons. This study was based on the notation of a knowledge commons, organised around shared intellectual and cultural practices. Unlike material resources, these intellectual and cultural resources are often non-rival and non-subtractive because one person learning or using knowledge does not prevent another person from doing the same (Nonini, 2007). Further, a knowledge commons can be *generative*, in the sense that it can "scale up" as it develops (Nonini, 2007). According to Nonini:

> The more users, the better the commons functions, since the marginal cost of adding users is zero, and new users are not only the recipients of the gift of non-rival knowledge from others in the commons, but they also reciprocate by producing new knowledge for them refined on the basis of knowledge previously received. (2007, p. 71)

According to Abrell (2009), a commons involves the continual "movement and growth of knowledge that benefits not just the original community that provided the knowledge but other communities too" (2009, p. 16). Benkler (2006) explains that a commons refers to a particular institutional form of structuring rights to the access, use and control of resources:

> Commons are another core institutional component of freedom of action in free societies, but they are structured to enable action that is not based on exclusive control over resources necessary for action. (Benkler, 2006, p. 24, quoted in Abrell *et. al.,* 2009, p. 16)

TK accounts for an invaluable part of the lives of ILCs, and this study proceeded on the presumptions that:

- there is a need to preserve and protect TK;
- preservation and protection should not inhibit access;
- access should encourage open collaboration and collaborative creativity for open development; and
- access should take into account existing cultural norms and practices of ILCs.

# 4. Findings: the Kenyan legal and policy environment

At local, regional and international levels, two forms of legal protection of TK are prominent. There is *defensive* protection, intended to prevent others from asserting or acquiring IP rights over TK subject matter. Such protection may include making information available to patent and trademark examiners – so that formal IP rights are not granted for TK that is in the public domain (as far as patents are concerned) or that is a protectable element of identification of indigenous peoples and traditional communities (as far as trademarks are concerned).

One type of defensive TK protection is databases or other inventories of TK available to patent and trademark examiners (WIPO, 2003a, para. 12). One such model is the aforementioned TKDL in India (CSIR, n.d.). There is also *positive* protection of TK, which is intended to give TK holders the right to take action or seek remedies against certain forms of misuse of their TK. Positive protection of TK includes the use of existing IP systems, adaptations and *sui generis* elements of existing IP regimes, and wholly *sui generis* protection (WIPO, 2003b).

## *International and regional legal instruments*

Kenya is a party to several international and African regional treaties, conventions and protocols that directly and indirectly protect various forms of IP rights, including patents, copyright and related rights, trademarks, industrial designs, utility models, geographical indications, trade secrets, plant breeders' rights and TK. This section examines some of the instruments that have a bearing on the protection of TK – and potentially on the formalisation of a TK commons – in Kenya.

### *Convention on Biological Diversity (CBD) (1992)*

Article 1 of the CBD aptly captures the central role of the CBD in the protection of TK and genetic resources *vis-à-vis* a TK commons for development purposes. Article 8(j) of the CBD provides the legal framework that deals with the preservation and process of adding value to TK. Article 17 seeks to promote exchange of information, including indigenous knowledge and TK, from all publicly available sources relevant to the conservation and sustainable use of biological diversity, taking into account the special needs of developing countries. This provision has the potential to promote knowledge-sharing for research and development. The language of the CBD articles in relation to TK has the potential to facilitate the core elements of a TK commons: non-appropriation, recognition of existing

cultural norms and regulations that govern TK, freedom of access and prior informed consent. The CBD also leaves room for flexibility, as it provides minimum standards, but not mandatory harmonisation.

### *Paris Convention for the Protection of Industrial Property (1883)*

The Paris Convention was the first major treaty designed for the international protection of intellectual creations in the form of industrial property rights, including inventions (patents), trademarks and industrial designs. In the context of a potential TK commons, the Paris Convention's provisions on geographical indications, collective marks and certification marks all have the potential to play roles in identification of particular types of TK commons (Art. 7*bis*).

### *Patent Cooperation Treaty (PCT) (1970)*

The PCT provides a system of simultaneous patent application filing for an invention in each of a large number of countries. The existing patent search databases maintained by the International Bureau of WIPO and other regional and national registration bodies could be helpful in the case of formalisation of a TK commons via establishment of an electronic TK database (see CSIR, n.d.).

### *International Treaty on Plant Genetic Resources for Food and Agriculture (International Seed Treaty) (2001)*

This treaty recognises the contribution of ILCs in farming, conservation and development of plant varieties, and aims to ensure that any benefits derived from the use of genetic resources by third parties are shared with the communities from which they originate.

### *UN Declaration of the Rights of Indigenous Peoples (2007)*

This declaration emphasises the rights of indigenous peoples in relation to the maintenance and strengthening of their own institutions, cultures and traditions, and their rights to pursue their development in keeping with their own needs and aspirations, including through documentation systems.

### *Swakopmund Protocol on the Protection of Traditional Knowledge and Expressions of Folklore (2010)*

In the context of potential formalisation of a TK commons, the Swakopmund Protocol, developed by Member States of the African Regional Intellectual Property Organisation (ARIPO), reaffirms the fact that TK ought to be

recognised, respected, preserved and protected from misuse, unlawful exploitation and misappropriation, while at the same time access is encouraged for the benefit of society. The Protocol limits the rights of access and exchange of TK to the TK's holders within the traditional context (Sect. 11). Article 8 of the Protocol allows TK holders to *generally* conclude licensing agreements for use of their TK, provided the agreements are in writing and approved by the competent national authority. In addition, the Protocol obliges contracting states to ensure that appropriate enforcement and dispute resolution mechanisms, sanctions and remedies are available where there is breach of provisions relating to the protection of TK (Sect. 23.1).

## *Kenyan national legal and policy framework*

The Constitution of Kenya of 2010 provides a potentially strong framework for the creation of enabling policies to ensure that benefits of TK accrue to ILCs, and to promote access and preservation of TK for the sustainability of ILCs. The Constitution is the supreme law of the Republic of Kenya and binds all persons and all state organs (Art. 2(1)). The Constitution specifically defines property to include IP (Art. 260). In addition, the Constitution recognises culture as the foundation of the nation and as the cumulative civilisation of the Kenyan people and state (Art. 11(1)). The Constitution provides the Kenyan state with a duty to promote all forms of national cultural expression, to recognise the role of indigenous technologies in development and to promote the protection of IP rights (Art. 11(2)). In addition, the state has to support, promote and protect the IP rights of the people of Kenya (Art. 40(5)). The Constitution also provides for the sustainable management and use of natural resources, and for protection of biodiversity and genetic resources (Art. 69(1)). These provisions provide the potential framework for drafting laws that go beyond protecting and preserving and, for example, make provision for the creation of TK databases.

Kenya has no specific law on the protection of TK but there are several laws that touch on the subject matter as it relates to copyright, biodiversity, genetic resources, agriculture, forestry and wildlife. The main legal instruments for the protection of IP in Kenya are the following:

- Anti-Counterfeit Act 13 of 2008.
- Copyright Act of 2001 (Cap. 130).
- Industrial Property Act of 2001 (Cap. 507).
- National Museums and Heritage Act 6 of 2006.
- Seeds and Plant Varieties Act of 1991 (as revised in 2012) (Cap. 326).
- Trade Marks Act of 1994 (Cap. 506).

The Industrial Property Act contains some elements that could be built upon to create a database for defensive protection of TK. The Copyright Act, meanwhile, gives the Attorney-General the power to authorise and prescribe terms and conditions governing the commercial use of expressions of folklore (Sect. 49). With regard to the Trade Marks Act, the provisions relating to legal protection of collective marks and geographical indications are relevant to this study. One of the objectives of the National Museums and Heritage Act is the identification, protection, conservation and transmission of the cultural and natural heritage of Kenya – provisions relevant to creating a database of TK. (Also potentially relevant, if they come to fruition, will be the proposed geographical indications law and proposed TK and TCEs law.)

At the policy level, Kenya has a National Policy on Traditional Knowledge, Genetic Resources and Traditional Cultural Expressions (hereafter "National TK Policy"). This National TK Policy, finalised in 2009, provides for a national framework that recognises, preserves, protects and promotes the sustainable use of TK to enhance the mainstreaming of TK systems in pursuit of national development objectives. The Policy recognises that there is a need to ensure that TK is not only protected but is also accessible for innovative, developmental uses. The Policy envisages a system that contributes to open innovation and collaborative creativity, while at the same time ensuring that TK is preserved and well documented. In order to achieve the above core objectives, the following guiding principles are identified as forming an integral part of the Policy: respect; full disclosure; prior informed consent; confidentiality; good faith; compensation; equitable benefit-sharing; sustainable development; access; and international cooperation. Most of these guiding principles will be directly relevant to any attempts to establish defined TK commons arrangements in Kenya. This National TK Policy is, at the time of writing, being used as the basis for a draft law, the Draft Bill on Protection of Traditional Knowledge and Traditional Cultural Expressions (hereafter "Draft TK Bill"), which was published for comment in May 2013. [4]

Another policy that has potential bearing on the creation of TK commons arrangements is the 2009 National Policy on Culture and Heritage. Under this Policy, the government must:

- promote culture as the centrepiece and driving force behind human, social and economic development, and encourage cultural pluralism; and

4 KECOBO convened a national consultative forum on 8 May 2013 where the Draft TK Bill was presented and discussed by various stakeholders. The Draft Bill was then made available on the KECOBO website, to allow for further comment before submission to the Office of the Attorney-General.

- take appropriate measures for the protection, conservation and preservation of tangible and intangible national heritage situated within its boundaries.

These two policies, though silent on the notion of a TK commons, clearly articulate the important role government institutions are expected to play in the protection of Kenyan culture, heritage and folklore/TCEs. Article 4(1) of the Draft TK Bill provides for KECOBO to be the "National Competent Authority" for implementation of an eventual TK law, while Article 4(3) provides for the establishment of the National Cultural Agency.

## 5. Findings: stakeholder perspectives

TK among the Maasai and Miji Kenda communities encompasses traditional medicine and healing processes, rituals, traditional cultural expressions (beadwork, music and designs), preservation of food, nutrition and diet, agriculture and animal husbandry. Certain aspects of TK, such as the farming methods, preservation of food, nutrition, diet, animal husbandry, art and design, are shared freely within the community. Traditional medicine and healing are practised by specific persons within the community. In the case of music, there were specific composers and authors who were recognised and rewarded for their creativity. Knowledge is, thus, limited to a specific family or person. These communities have systems of customs and taboos that ensure the preservation of TK. This also helps in the preservation of genetic resources.

The respondents from three government agencies – KECOBO, National Museums of Kenya and KIPI – were of the considered opinion that TK deserves to be protected but that at the same time it is important to ensure the TK is documented and made accessible for appropriate uses.

### *Legal/policy framework and role of government*

Some of the respondents were not aware of the notion of a TK commons. However, they raised concerns about the use of their knowledge by third parties to their detriment if that knowledge was made available without a proper legal or policy framework. There was, at the same time, a general understanding that the lack of documentation of TK left it open to misappropriation and exposed the communities to the risk of possibly losing the knowledge upon the death of its holders. This concern has been captured in the National TK Policy, among other challenges. The Miji Kenda community members articulated a desire to preserve and share their knowledge in an "open manner", with the exception of their sacred and secret TK (interviewees, 2011).

The interviews and focus group discussions exposed several challenges surrounding the preservation of TK within ILCs in Kenya, which in turn could have an impact on the creation of a TK commons. With the rapid modernisation within the communities, the younger generation is shunning traditional cultural practices and traditions. And because of low literacy levels, especially among those who hold the TK, the communities are finding it difficult to record their knowledge for future generations. For example, the *dhome,* a traditional Miji Kenda educational evening where elders pass on knowledge, is no longer held. As a result, there is a risk of the knowledge disappearing.

Interviewees and focus group participants from both the Miji Kenda and Maasai communities expressed deep concerns about the lack of proper legal and administrative structures to facilitate the preservation and perpetuation of their traditions and cultures in the face of modern socio-economic pressures. Their concerns present a potentially strong justification for the development of law and policy that can effectively facilitate protection and preservation of TK and, at the same time, sharing of the TK in a manner that can spur innovation, creativity and (open) development.

Apart from their concerns about the lack of a legal framework, the Miji Kenda perceive a tension between their own cultural conception of a TK commons and that expressed in government policies. There is a perception among the Miji Kenda that government policies are skewed in favour of other cultural communities, and that the National Museums of Kenya seem to institutionalise practices of favouritism. These tensions between the community and the government within the coastal region have a negative impact on the feasibility of the creation of a TK commons.

Other challenges to the creation of a TK commons cited by interviewees include financial constraints, especially in the creation of databases for the preservation of TK. The communities lack the facilities for documentation and rarely receive government support for such initiatives. They have to rely on community-based initiatives, which are usually underfunded. This is well illustrated by the experience of the Maasai community in the aforementioned process of digitising their culture. After the initial support received under the auspices of WIPO, they have not been able to secure any further funding, e.g. from the government of Kenya. Alarmingly, some interviewees were confused about the nature of TK and measures to protect it, due to the proliferation of research studies by different organisations. Some reports are inaccurate, and some researchers failed to disclose the purpose of their research to the communities in question. This undermines trust, and threatens the potential to develop inclusive policy proposals.

There is at present only limited collaboration between ILCs and government agencies such as KECOBO, National Museums of Kenya, KIPI and the Plant and

Health Inspectorate. The lack of collaboration creates impediments to the documentation and preservation of TK. There is also some unwillingness on the part of ILCs to share sacred or secret TK, especially as it relates to medicine and healing practices. Custodians are, understandably, not willing to share sacred knowledge with third parties, so this knowledge can only be conveyed through the traditional community systems. Some steps have been taken to try to address these challenges, including the digitisation of culture project among the Maasai community, and partnerships through community-based organisations, such as the MDCA, with government departments. Such initiatives potentially contribute to the formalisation of TK commons modalities within the communities.

The National TK Policy of 2009 takes cognisance of several challenges, such as: lack of recognition and lack of mainstreaming of TK systems in national policies and decision-making processes; lack of a TK database; inadequate capacity; and lack of TK linkage with IP, creativity and innovation. The main objective of the Policy is "to enhance and coordinate the application of traditional knowledge, innovations and practices in sustainable use of genetic resources and sustainable development in Kenya" (National TK Policy, 2009). This would include, among other things, the provision of the necessary legal and institutional framework for the documentation and application of TK, and fostering the use and dissemination of TK while ensuring that the ILCs benefit and enhance partnerships in the access and utilisation of TK innovations and practices (interviewees, 2011). Respondents from KECOBO, National Museums of Kenya and KIPI noted that the lack of implementation of this Policy to date has presented a challenge to the creation of TK commons structures. There is a need for a definite legal and administrative framework that will enable the achievement of the objectives of the Policy.

### *Use of information and communication technology (ICT)*

With the advent of digital technology and the proliferation of the internet, works are reduced to digital format and can be reproduced, accessed and disseminated with relative ease across networks. An online licensing system could work well by affording a large degree of transparency. TK could be digitised and stored in an electronic database that has controlled or limited access. A good example is the TKDL in India. It provides information to specific patent offices and is also a tool for defensive protection of TK. The TKDL can also be used for research and development.

The Maasai interviewed for this study stated that there was a need to establish communication channels with relevant government departments and agencies, as well as research institutions and universities, to forge collaborative partnerships. Their TK is currently being preserved through the oral tradition, but there

have been attempts by individuals within and from outside the community to document the traditions. They believe that the cultural digitisation project will eventually provide a platform for TK documentation as well as provide access. The project on digitisation of culture among the Kenyan Maasai community in Laikipia does indeed provide a potential starting point for documentation of traditional cultural practices, including TK and TCEs. The project was carried out under the auspices of WIPO through what is known as Digitising Traditional Culture in Kenya, under WIPO's Creative Heritage Project. There was no documentation of the Maasai TK prior to the WIPO project on digitisation of culture, and the full impact of the project is yet to be felt by the community.

KECOBO and KIPI, in consultation with WIPO, are planning to set up a digital library for TK. Although the Copyright Act requires the users of TK (specifically TCEs) to obtain authority to use the works (and to pay a fee), there is no database in place. The setting up of a digital library for TK would facilitate the establishment of this database. KECOBO and KIPI have proposed amendment of the Copyright Act to provide a substantive provision for the creation of the database, which would be maintained by KECOBO and be accessible by the public. The first step would be to engage the ILCs in the collection of the data. KECOBO and KIPI are currently studying the TKDL model in India to develop the necessary ICT tools, and a KIPI representative was sent to India to obtain first-hand exposure to the workings of the TKDL. Although KECOBO and KIPI view the TK digital library initiative as a form of defensive protection, they also see it as a means to facilitate access to TK for future innovations.

## 6. Conclusions

Most interviewees were not aware of the concept of a TK commons. However, after some probing and discussion, they were able to have insightful discussions on the policy considerations and challenges as well as the legal, economic, social and cultural dimensions of such a commons. The IP regime emphasises *defensive* protection of TK, as it is intended to prevent others from asserting or acquiring IP rights in TK. The proposed *sui generis* protection of TK by way of a commons offers *positive* protection, which affords flexibility for access and the creation of databases. It is important to have a clear understanding of the dynamics within a given community in order to engage the members in a productive discussion in relation to TK commons and openness-based approaches to development (open development).

The current legal regime, to a certain extent, provides a framework for the creation of a TK commons. However, the laws have limitations, as the framework

only covers what is related to conventional IP. In some cases, the IP regime may limit the creation of commons modalities, as it provides exclusive rights to the exclusion of all others for a certain period of time. There is need for a legal framework that provides for the protection of TK as well as providing for access, i.e. a TK law aligned with the National TK Policy. (The aforementioned Draft TK Bill, published in May 2013 and under review at time of writing, will presumably lead to a law that addresses this need for a dedicated legal framework for TK.)

Communities face social and economic challenges that will affect the creation of a TK commons, increasing the need for government involvement. However, there is a clear gap between the policy-makers at the government level and the ILCs in Kenya. Collaboration between the policy-makers, users and TK custodians is required to facilitate discussions on policy issues.

The focus group and interview findings also clearly demonstrated a need for training and capacity building, including creating awareness among government, universities and research institutions, about the role of TK in (open) development. The creation of an electronic database of TK could further capacity building, and requires the support of government institutions such as KECOBO, National Museums of Kenya and KIPI – as well as the ILCs who are custodians of the TK.

Collaborative creativity and open innovation require access to TK. Technology is crucial for the creation of databases such as a TK digital library, which would provide access but remain within the control of the ILCs. This would also address the issue of preserving TK, which is at risk of being lost with diminishing intergenerational cultural knowledge transfer practices. Commons modalities involve the evolution of knowledge in service to both the original community and other communities. The creation of a TK commons in Kenya would encourage the sharing of information that could be utilised better for purposes of open development.

There is a need to provide for the implementation of the National TK Policy to ensure that it facilitates the creation of the TK commons modalities that can encourage innovation and collaborative creativity for development. The Draft TK Bill currently has provisions that provide for an institutional framework for TK management, with KECOBO (as the National Competent Authority in terms of the Draft Bill) expected not only to ensure the protection of TK but also to create a TK framework (which could potentially be favourable for establishment of a TK commons) through the creation of a database (which the Draft Bill describes as "a record of traditional owners and/or knowledge and traditional cultural expressions" (Draft TK Bill, 2013). Concerted and/or collaborative policy efforts on a TK commons should be pursued with the twin objectives of perpetuating TK and enhancing its value in a mutually beneficial manner for creativity and open development. The National TK Policy and Draft TK Bill take into account the preservation and protection of TK, and the facilitation of

access and dissemination of TK, thus appearing to take into account the concerns raised by the custodians of TK (some of which have been documented in this study). The Policy, if properly implemented via, *inter alia*, an eventual TK law, provides for engagement with TK by policy actors both within government and in communities.

# Bibliography

## *Primary sources*

### *Statutes, regulations and draft bill*

Kenya:
Anti-Counterfeit Act 13 of 2008.
Constitution of Kenya of 2010.
Copyright Act of 2001 (Cap. 130).
Copyright Regulations of 2005.
Draft Bill on Protection of Traditional Knowledge and Traditional Cultural Expressions (Draft TK Bill) (2013).
Industrial Property Act of 2001 (Cap. 507).
National Museums and Heritage Act 6 of 2006.
Seeds and Plant Varieties Act of 1991, as revised in 2012 (Cap. 326).
Trade Marks Act of 1994 (Cap. 506).

Other:
Decree-Law No. 118/2002, Government of Portugal, available at: www.wipo.int/wipolex/en/details.jsp?id=5897 (accessed 10 April 2013).
Provisional Measure No. 2.186-16, Government of Brazil, available at: www.wipo.int/wipolex/en/details.jsp?id=5897 (accessed 10 April 2013).

### *Regional and international instruments*

Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) (1994).
Berne Convention for the Protection of Literary and Artistic Works (1970 Act).
Convention on Biological Diversity (CBD) (1992).
International Convention for the Protection of New Plant Varieties (1978).
International Treaty on Plant Genetic Resources for Food and Agriculture (2001).
International Convention on Economic and Social Rights (1966).
Paris Convention for the Protection of Industrial Property (1883).
Patent Cooperation Treaty (PCT) (1970).

Swakopmund Protocol on the Protection of Traditional Knowledge and expressions of Folklore (2010).
Universal Declaration of Human Rights (1948).
UN Declaration of the Rights of Indigenous Peoples (2007).

### *Kenyan Policies*

National Policy on Traditional Knowledge, Genetic Resources and Traditional Cultural Expressions (National TK Policy) (2009).
National Policy on Culture and National Heritage (2009).

## *Secondary sources*

Abrell, E. (2009), *Implementing a Traditional Knowledge Commons: Opportunities and Challenges*, Natural Justice, available at: http://naturaljustice.org/wp-content/uploads/pdf/Implementing_a_TKC-2009.pdf (accessed 10 April 2013).

Abrell E., Bavikatte, K.S., Cocchiaro, G., Jonas, H. and Rens, A. (2009), *Imagining a Traditional Knowledge Commons: Opportunities and Challenges*, Natural Justice and International Development Law Organisation (IDLO), available at: www.idlo.int/publications/Traditionalknowledge.pdf (accessed 10 April 2013).

Action Research Resources (n.d.), "Grounded theory", available at: www.scu.edu.au/schools/gcm/ar/arp/grounded.html (accessed 10 April 2013).

Benkler, Y. (2006), *The Wealth of Networks*, Yale University Press, New Haven, CT.

Bergy, B. (2011), "A multi-faceted approach to the support and conservation of folklore, traditional culture", paper delivered at the International Symposium on Protection and Legislation of Folk/Traditional Culture, 18–20 December, Beijing.

Council of Scientific and Industrial Research (CSIR) (n.d.), "Traditional Knowledge Digital Library", India, available at: www.tkdl.res.in/tkdl/langdefault/common/Home.asp?GL=Eng (accessed 10 April 2013).

Edmonds Institute and African Centre for Biosafety (2006*), Out of Africa: Mysteries of Access and Benefit Sharing*, available at: www.newscastmedia.com/4investors_africa.pdf (accessed 10 April 2013).

Folke, C. (2004), "Traditional knowledge in social-ecological systems", *Ecology and Society*, Vol. 9 No. 3, available at: www.ecologyandsociety.org/vol9/iss3/art7 (accessed 10 April 2013).

Hansen, S. and Van Fleet, J. (2003), *Traditional Knowledge and IP: A Handbook on Issues and Options for Traditional Knowledge Holders in Protecting their IP and Maintaining Biological Diversity*, available at: http://shr.aaas.org/tek/handbook/handbook.pdf (accessed 10 April 2013).

Hudson E. and Kenyon, A.T. (2006), *Copyright and Cultural Institutions: Guidelines for Digitisation*, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=881699 (accessed 10 April 2013).

Nonini, D.M. (2007), "Introduction: the global idea of 'the commons'", in Nonini, D.M. (Ed.), *The Global Idea of "the Commons"*, Berghahn Books, New York, pp. 1–25.

Oguamanam, C. (2006), *International Law and Indigenous Knowledge: IP Rights, Plant Biodiversity and Traditional Medicine*, University of Toronto Press, Toronto.

Ostrom, E. (1990), *Governing the Commons: The Evolution of Institutions for Collective Actions*, Cambridge University Press, Cambridge, UK.

Smith, M.L., Elder, L. and Emdon, H. (2011), "Open development: a new theory for ICT4D", *Information Technologies and International Development*, Vol. 7 No. 1, Spring (Special Issue: Open Development), available at http://itidjournal.org/itid/article/view/692/290 (accessed 10 April 2013).

Society for Critical Exchange (SCE) (2004), *Case Study: Hoodia Cactus*, Case Western Reserve University, available at: www.case.edu/affil/sce/authorship-spring2004/hoodia.html (accessed 10 April 2013).

Tingoi, J.O. (n.d.[a]), "Community documentation of cultural heritage: Laikipia Maasai community experience – Kenya", available at: www.wipo.int/edocs/mdocs/tk/en/wipo_tk_mct_11/wipo_tk_mct_11_ref_t_4_1.pdf (accessed 10 April 2013).

Tingoi, J.O. (n.d.[b]), "Creative Heritage Project: digitizing traditional culture in Kenya", available at: www.wipo.int/portal/en/wipo_untv_maasai.html (accessed 10 April 2013).

Tingoi, J.O. (n.d.[c]), "Digitizing traditional culture in Kenya", available at: www.wipo.int/portal/en/wipo_untv_maasai.html (accessed 10 April 2013).

Torsen, M. and Anderson, J. (2010), *IP and Safeguarding of Traditional Cultures: Legal Issues and Practical Options for Museums, Libraries and Archives*, World Intellectual Property Organisation (WIPO), Geneva.

Trochim, W.M.K. (2006), "Research methods knowledge base: qualitative measures", available at: www.socialresearchmethods.net/kb/qual.php (accessed 10 April 2013).

Wane, N.N. (2000), "Indigenous knowledge: lessons from elders – a Kenyan case study", in Dei, G.S., Hall, B.L. and Rosenberg, D.G. (Eds), *Indigenous Knowledges in Global Contexts: Multiple Readings of Our World*, University of Toronto Press, Toronto, pp. 54–69.

World Intellectual Property Organisation (WIPO) (2001), *Intellectual Property Needs and Expectations of Traditional Knowledge Holders: WIPO Report on Fact-Finding Missions on IP and Traditional Knowledge (1998–1999)*, Geneva.

World Intellectual Property Organisation (WIPO) (2003a), *Consolidated Analysis of the Legal Protection of Traditional Cultural Expressions/Expressions of Folklore*, Geneva.

World Intellectual Property Organisation (WIPO) (2003b), *Consolidated Survey of Intellectual Property Protection of Traditional Knowledge*, WIPO/GRTKF/IC/5/7, Geneva.

World Intellectual Property Organisation (WIPO) (2003c), *Overview of Activities And Outcomes of the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore*, WIPO/GRTKF/IC/5/12, Geneva.

Yin, R.K. (2009), *Case Study Research: Design and Methods,* 4th ed., Sage, Thousand Oaks, CA.

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