

Agricultural Information Worldwide

AN INTERNATIONAL JOURNAL FOR INFORMATION SPECIALISTS IN AGRICULTURE, NATURAL RESOURCES, AND THE ENVIRONMENT

ISSN: 1998-0027

Vol. 2, No. 3, 2009



Agricultural Information Worldwide:

An International Journal for Information Specialists in Agriculture, Natural Resources, and the Environment

Official Journal of the International Association of Agricultural Information Specialists (IAALD)
ISSN: 1998-0027 IAALD Secretariat, P.O. Box 63, Lexington, KY 40588-0063, USA e-ISSN: 2075-7751

Editor: Debra L. Currie, North Carolina State University, Raleigh, NC 27695-7111, USA. E-mail: debbie_currie@ncsu.edu
Deputy Editor: Barbara Hutchinson, University of Arizona, Tucson, AZ, USA. E-mail: barbarah@ag.arizona.edu
Assistant Editor: Amélie E.M. Charron, University of Kentucky, Lexington, KY, USA.

Editorial Board

Pamela André (USA) — Former director, U.S. National Agricultural Library and past IAALD President.
E-mail: pamandre@hotmail.com

Subbiah Arunachalam (India) — Distinguished Fellow at the Centre for Internet and Society, Bangalore.
E-mail: subbiah.arunachalam@gmail.com

Tomaž Bartol (Slovenia) — Chair of Information Science and Head of the Slovenian National AGRIS Centre at the University of Ljubljana. E-mail: tomaz.bartol@bf.uni-lj.si

Ehud M. Gelb (Israel) — An agricultural economist whose research focuses on ICTs in rural areas.
E-mail: gelb@agri.huji.ac.il

Johannes Keizer (Italy) — Heads an Information and Knowledge Management Group for the Knowledge Exchange and Capacity Building Division of the Food and Agriculture Organization of the United Nations (FAO), Rome. E-mail: Johannes.Keizer@fao.org

Roger Mills (United Kingdom) — Biosciences and Environmental Sciences Librarian at Oxford University Library Services and current president of EBHL (European Botanical and Horticultural Libraries). E-mail: roger.mills@ouls.ox.ac.uk

Dennis Ocholla (South Africa) — Professor and Head of the Department of Library and Information Science and Vice-Dean Faculty of Arts at the University of Zululand. E-mail: docholla@pan.uzulu.ac.za

Lutishoor Salisbury (USA) — Librarian/University Professor at University of Arkansas Libraries, Fayetteville. E-mail: lsalisbu@uark.edu

Rubén Urbizagástegui (USA) — Librarian at University of California, Riverside, and current president of AIBDA (Asociación Interamericana de Bibliotecarios, Documentalistas y Especialistas en Información Agrícola). E-mail: ruben@ucr.edu

Qiaoqiao Zhang (UK/China) — Director, East Asia, for CABI. E-mail: q.zhang@cabi.org

Agricultural Information Worldwide is abstracted/indexed in AGRICOLA; CAB Abstracts; Library Literature & Information Science; and Library, Information Science & Technology Abstracts (LISTA).

Membership/Subscriptions

Free to IAALD Members. For current membership/subscription rates, see the IAALD website (<http://www.iaald.org>). Subscription requests and applications for membership should be directed to: IAALD Subscriptions, c/o IAALD Secretariat, A.P. Greider, Secretary/Treasurer, P.O. Box 63, Lexington, KY 40588-0063, USA, or to toni.greider@iaald.org.

Advertising Rates for *Agricultural Information Worldwide*

Type	Category	Rate
Full page product advertisement – one issue	IAALD Institutional member	US\$350
Full page product advertisement – one issue	IAALD non member	US\$500
Full Page product advertisement – Entire volume (3 issues)	IAALD Institutional member	US\$750
Full Page product advertisement – Entire volume (3 issues)	IAALD non member	US\$1100
Info page on product or service – one issue	IAALD Institutional member	US\$300 per page
Info page on Product or service – one issue	IAALD non member	US\$400 per page
Sending an ad with <i>Agricultural Information Worldwide</i>	IAALD member/non member	US\$350
Mailing List (1200 names)	IAALD member/non member	US\$600

- All advertising must be prepaid.
- Dimensions for full page ads are 6.75 in wide by 9.5 in long (17 cm by 24 cm).
- All ads must be camera ready and will be printed as received.

- IAALD reserves the right to reject any ad submitted for publication.
- IAALD does not endorse any product.

For more information about IAALD or *Agricultural Information Worldwide*, please visit <http://www.iaald.org>

Agricultural Information Worldwide:
An International Journal
for Information Specialists in
Agriculture, Natural Resources,
and the Environment

L'Information Agricole Mondiale:
une Revue Internationale pour
les Spécialistes d'Information sur
l'Agriculture, les Ressources Naturelles
et l'Environnement

Información Agrícola a Nivel Mundial:
Una Revista Internacional para
Especialistas de Información en
Agricultura, Recursos Naturales
y Medio Ambiente

— Agricultural Information Worldwide —

Vol. 2, no. 3 ▪ 2009

Edited by: Debra L. Currie
Deputy editor: Barbara Hutchinson
Assistant editor: Amélie E.M. Charron



▪ Official Journal of the International Association of Agricultural Information Specialists (IAALD) ▪
IAALD Secretariat, P.O. Box 63, Lexington, KY 40588-0063, USA

Instructions for Authors

Agricultural Information Worldwide: An International Journal for Information Specialists in Agriculture, Natural Resources, and the Environment (AgInfo World) is the official journal of the International Association of Agricultural Information Specialists (IAALD). *AgInfo World* provides an international forum for high quality articles on information, knowledge and communication activities related to the applied life sciences, including agriculture, food from production to marketing, natural resources, fish and wildlife, environment, and agricultural extension and education. Priority will be given to practical and applied topics, such as but not limited to best practices. Research articles with practical applications will also be considered for publication.

Articles submitted will go through a blind review process with an independent reviewer and will be returned to the author for corrections and modifications if necessary. Research should be statistically valid and replicable with the results of broad applicability. English, French, and Spanish language articles will be considered for publication. Generally, full articles should not exceed 5000 words, but longer articles will be considered on a case-by-case basis.

All *AgInfo World* articles are published with a specific tabular style and follow bibliographic conventions as listed in the *Chicago Manual of Style* 15th edition. References should be complete and tables should comply with the editorial style represented in *AgInfo World*. Notes and references should be presented at the end of

an article, not as footnotes. An English language abstract of 150 words or less is required at the time of submission. Additional abstracts in French and Spanish are welcome. Articles submitted should be accompanied with the institutional affiliation and address of each author as well as a brief biography.

In addition to full articles, *AgInfo World* also publishes short reports and updates on projects, tools, and organizations in its *AgInfo Dispatches* section. Dispatches will be less formal in nature and will be reviewed for acceptance by the Editor. Dispatch submissions do not require abstracts and should not exceed 1500 words.

As of January 1, 2008, *AgInfo World* will only accept manuscripts submitted in standard electronic formats, either on disk (accompanied by a hard copy) or as e-mail attachments. MS Word (.doc) or Rich Text Format (.rtf) documents are preferred; please contact the Editor regarding other acceptable formats. Graphics may be embedded in the native word processor file, but for optimum layout efficiency and reproduction it is best to also submit them separately on disk or by e-mail.

To learn more about publishing in *AgInfo World*, please contact the Editor:

Debra L. Currie, IAALD Editor
1701 Su John Road
Raleigh, NC 27607
USA
E-mail: debbie_currie@ncsu.edu

Acknowledgements

The Association would like to thank the following people for contributing to the publication of this issue of *Agricultural Information Worldwide*:

Copy editing: D. L. Currie, A. Charron
French translations: M.J. Jehl-Cooke
Spanish translations: L. Menendez, CIAT
Typesetting/Composition:
The Typewriter, Lexington, Kentucky

Printing & Distribution by:
Allen Press, Lawrence, Kansas
Mailing list management: A.P. Greider

Reviewers

Pamela Q.J. André
USA

Tomaz Bartol
University of Ljubljana
SLOVENIA

Dr. Barbara Hutchinson
University of Arizona
USA

Dr. Andrew M. Kaniki
Information Studies Dept.
University of Natal
SOUTH AFRICA

Mr. Barnabas W. Kapange
Ministry of Agriculture and
Cooperatives
TANZANIA

Dr. Tibor Koltay
Central Library, Goedoello
University of Agricultural
Sciences
HUNGARY

Dr. Robert McGeachin
Agriculture Library
Texas A&M University
USA

Ms. Lillian Mesner
USA

Ms. Rosemay Ng Kee Kwong
Library & Scientific Informa-
tion Service, Mauritius Sugar
Industry Research Institute
MAURITIUS

Mr. L.O. Nwali
Abubakar Tafawa Balewa
University
NIGERIA

Ms. Lutishoor Salisbury
University Professor/Librarian
University of Arkansas
USA

Mr. H. van Hartevelt
Head of Information Services
Royal Tropical Institute
THE NETHERLANDS

Dr. Hope Webber
Hanze University of Applied Sciences
THE NETHERLANDS

Mr. John E. Woolston
CIMMYT Scientific Information Unit
MEXICO

Dr. Qiaoqiao Zhang
CABI
UNITED KINGDOM

From the Editor's Desk

In this final issue of volume 2 (2009) of *Agricultural Information Worldwide*, we bring to you selected papers from the Second IAALD Africa Chapter Conference, which was held July 15–17, 2009, in Accra, Ghana, with the theme, “Towards Opening Access to Information & Knowledge in the Agricultural Sciences and Technology in Africa.” The issue opens with an introductory essay by Dr. Justin Chisenga, President of the IAALD Africa Chapter, followed by eight papers written by some of the key movers and shakers in the open access/archives movement in Africa. The papers focus on some specific open access/archives initiatives, the challenges faced by institutions in the agricultural sciences and technology field in Africa, and the way forward. Special thanks go to the Technical Centre for Agricultural and Rural Cooperation (CTA) for providing monetary support towards the publication of this issue.

As my second term as IAALD Editor draws to a close, I cannot help but look back over the past ten years and marvel at all the changes that the association and the profession have undergone. Among those changes was the emergence and rapid development of the IAALD Africa Chapter, which underscored the progress made in Africa during my tenure as IAALD Editor. As incoming editor, I attended the Xth IAALD World Congress in January 2000 in Dakar, Senegal, which was the first such IAALD event to be held in Africa. It was also my first venture outside of the United States other than a single family trip to Italy in 1995. As I flew to Senegal, I had little understanding of what the next ten years held for me: the places I would go, the people I would meet, the dialogues, discussions, and change-making moments I would experience — what a wonderful decade it would be! I would go on to get the education of a lifetime, make some wonderful friends, and come away with a new understanding of the world.

Following IAALD's next two major events — the 2001 International Conference on the Development of Agricultural Information Management, Technology and Markets in the 21st Century (Beijing, China) and the 2005 (XIth) IAALD World Congress (Lexington, Kentucky, USA) — IAALD returned to Africa in May 2006 to formalize and celebrate the formation of the IAALD Africa Chapter with the First IAALD Africa Chapter Conference in Nairobi, Kenya. I was in my second term as IAALD Editor by that time, so I was perhaps a little more seasoned but no less enthralled by the exuberance, vitality, and determination of the African agricultural information community. What had begun as a glimmer of an idea in Lexington had grown into a full-fledged chapter in just one year. The Africa Chapter thus joined the Central and Eastern Europe Chapter and the China Chapter as a foundation for

IAALD's evolution and growth. In February 2010, another new IAALD chapter, for the United Kingdom and Ireland, was launched (see “News from IAALD” in this issue). This continued expansion is considered to be critical by those of us who believe that IAALD's future lies in its chapters.

As I prepare to leave my editorial post, I look back over the past ten years and see the faces of many people whose guidance, support, and contributions I would like to acknowledge. First and foremost, of course, is former editor and current IAALD Secretary/Treasurer Toni Greider. Our relationship goes back more than 15 years, throughout which she has been a wonderful mentor, colleague and friend. More than once, Toni calmed me down when I was feeling overwhelmed by the editorial workload, reminding me that it was a volunteer position and to ‘just do the best that I could’. Of course, Toni's standards have always been very high, so ‘doing the best that I could’ was still a challenge! I also received a lot of support and encouragement from the members of the two Executive Committees with which I served, most notably Pamela André, Peter Ballantyne, Margot Bellamy, and Barbara Hutchinson. From guest editing issues to suggesting themes, reconceptualizing the association's 50-year-old journal, revolutionizing our news delivery mechanisms, and orchestrating the leap to electronic access, these four along with Toni provided me with the foundation that was necessary to keep the journal moving forward.

There are so many others to thank as well, beginning first with you, the readers, and all the authors who so generously shared their knowledge and experiences with you. Special thanks go to our Editorial Board and all of our reviewers; our typesetter, Charles Chandler of The Typewriter; our Assistant Editor, Amélie Charron; and our translators, Marie Josee Jehl-Cooke (French) and Lynn Menendez (Spanish). Their many contributions to the success of the IAALD *Quarterly Bulletin* and *Agricultural Information Worldwide* were and are greatly appreciated!

And with that, I will say farewell as IAALD Editor, but not as a member of IAALD or as your colleague within the agricultural information community. When Toni steered me towards agricultural librarianship some 18 years ago, little did I realize how much joy and fulfillment this profession would bring me. I feel fortunate to call all of you colleagues — and a whole host of you friends!

Please watch for an announcement in the near future regarding the editor position. In the meantime, please feel free to contact me at the address below if you have any comments, questions, or concerns.

Debbie Currie
Past IAALD Editor
E-mail: debbie_currie@ncsu.edu



PAPERS FROM THE

2nd IAALD Africa Chapter Conference

JULY 15–17, 2009, ACCRA, GHANA

IAALD would like to thank the individuals who reviewed the IAALD Africa Conference papers that are presented in this issue.

Ms. Irene Onyancha, Information Management Specialist/Librarian
United Nations Economic Commission for Africa, Addis Ababa, Ethiopia.

Dr. Paul Hoba, Head – Communication Services
Association of African Universities, Accra, Ghana.

Dr. Justin Chisenga, Information Management Specialist
Food and Agriculture Organization (FAO) – Regional Office for Africa, Accra, Ghana.

Mr. Clement Entsua-Mensah, University Librarian
University of Cape Coast, Cape Coast, Ghana.

Mr. Dady Demby, Programme Officer
Forum for Agricultural Research in Africa (FARA) – Regional Agricultural
Information and Learning System (RAILS), Accra, Ghana.

Dr. Heila Pienaar, Strategic Innovation Manager
Academic Information Service, University of Pretoria, Pretoria, South Africa

Dr. Martie van Deventer, Portfolio Manager
Information Services, Council for Scientific and Industrial Research, Pretoria,
South Africa.

Prof. Stephen Mutula
Department of Library and Information Studies, University of Botswana,
Gaborone, Botswana.

Dr. Dick Kawooya, Lecturer/Coordinator International Initiatives, School of
Information Studies, UM – Milwaukee, USA

Towards Opening Access to Information and Knowledge in the Agricultural Sciences and Technology in Africa

Dr. Justin Chisenga, President of the IAALD Africa Chapter and Information Management Specialist at the FAO Regional Office for Africa in Accra, Ghana, discusses the great potential that the Open Access Initiative and Open Archives Initiative have to open up and enhance the visibility of Africa's research outputs and the challenges that must be overcome in order for that potential to be fulfilled.

Africa's research outputs are usually disseminated in two broad categories: research outputs published in the world's scientific peer-reviewed journals; and research outputs published as 'grey literature' (i.e. unpublished or self-published information and knowledge resources such as research reports, theses and dissertations, seminar and conference papers) generated by research and academic institutions. We are also beginning to see a few researchers 'publishing' or communicating their work directly on the Internet, through blogs, wikis, online journals, and so forth.

Much of the scientific research output from Africa is in the form of grey literature 'documents'. These documents are produced in limited numbers and are rarely made available on the Internet. Grey literature documents have limited circulation and visibility even within the institutions where they are produced. Consequently, this important literature is not only inadequately documented, but also impossible to access. There are neither regional nor national comprehensive databases that one can use to locate and access this literature. The result is that very useful and valuable scientific and technical information and knowledge remains unexploited, and in many cases is lost forever.

Sadly, very few local journals are published on regular basis in Africa, and those that are generally are poorly distributed and lack visibility, although this situation is slowly improving with the implementation of the African Journals Online (AJOL) initiative. However, from the viewpoint of the global scientific community, very little of Africa's research output finds its way into the world's well-established commercial international databases.

The Open Access Initiative and Open Archives Initiative have great potential to open up and enhance the visibility of the outputs of research from Africa. Open Access/Archives approaches promote universal unrestricted free access to full-text scholarly materials and scientific research via the Internet, using interoperable standards that aim to facilitate the efficient dissemination of, and access to, content. Fortunately, the modern information and communication technologies (ICTs) provide us

with the infrastructural means to capture, secure and share such valuable intellectual capital through the development and management of databases and institutional repositories.

Unfortunately, at this time, Open Access and Open Archives appear to present more challenges than solutions in Africa, for all of the stakeholders in the agricultural research information/knowledge value chain. Key challenges faced include:

- **Lack of Understanding of Open Access** – Experience gained from implementing agricultural sciences and technology information network projects that include a provision for Open Access to full-text documents accessed via institutional repositories has shown that a good number of research scientists, policy makers, and documentalists in government-funded agricultural research institutes are yet to understand what Open Access entails. The fear of the unknown has caused many researchers to refuse to make their documents available for inclusion in institutional repositories. Further, very few researchers are aware of publisher policies regarding depositing pre-prints, post-prints and PDF copies of journal articles in institutional repositories.
- **Mistrust Among Researchers** – In some research institutes, competition for promotion has resulted in researchers not sharing their research outputs, especially those in the form of grey literature, with colleagues within the institutions. This is because they fear that the outputs may be exploited and that their colleagues could publish articles based on them. This has contributed to some researchers' refusal to release their reports for deposit in institutional repositories.
- **Infrastructure Challenges** – Although opening access to information resources does not necessarily require a sophisticated technical infrastructure, making information available to a wider community in full-text digital formats accessed via institutional repositories requires Internet access and adequate bandwidth. Most public research institutes do not have adequate Internet facilities. In some institutes, even local area networks and institute-wide networks are not yet in place.

- **Intellectual Property Rights (IPR) Issues** – There are some agricultural research institutes on the continent that do not have adequate policies and strategies in place to manage IPR. In addition, some institutes do not have the capacity to commercialise research outputs that may have a commercial value. As a result, denying access to outputs of research in most cases has become the easiest and surest way of ensuring that these resources are not exploited by others.
- **Institutional Information Policies and Strategies** – Even in cases where information resources are available within the institutions, the absence of appropriate information policies and strategies sometimes makes it very difficult for information professionals to know which resources should be shared or made available for access in digital format.

As a result of the above challenges, the scientific community, and research policy makers and to some extent information/knowledge management specialists in most publicly-funded research institutions have not enthusiastically embraced Open Access/Archives approaches. Institutional repositories and Open Access Archives are not yet a common feature of the African agricultural

digital scientific information environment. Overall, Africa lags way behind in numbers of open access institutional repositories and open access journals despite the huge potential these initiatives have to open up access to the continents' information resources.

To contribute to the discussions on the above challenges, the Africa Chapter of the International Association of Agricultural Information Specialists (IAALD) held an international conference from 15 to 17 July 2009 at M Plaza Hotel in Accra, Ghana, on the theme – *Towards Opening Access to Information and Knowledge in the Agricultural Sciences and Technology in Africa*. The discussions at the conference focused on initiatives aimed at opening access to agricultural sciences and technology information and knowledge including Open Access/Archives initiatives, the challenges faced by institutions in the agricultural sciences and technology field in Africa, and the way forward.

EDITOR'S NOTE: The eight papers in this issue were presented during the IAALD Africa Chapter Conference and were selected by the conference organizers for publication in *Agricultural Information Worldwide*.

Vers l'accès ouvert à l'information et la connaissance pour les sciences agricoles et la technologie en Afrique

Dr. Justin Chisenga, le président du Chapitre Afrique d'IAALD et le Spécialiste en gestion de l'information auprès du Bureau régional de la FAO pour l'Afrique (Accra, Ghana), discute du grand potentiel qu'ont les Initiatives Accès ouvert et Archives ouvertes pour ouvrir et améliorer la visibilité des résultats de recherche d'Afrique, ainsi que des défis qui doivent être surmontés pour que ce potentiel soit atteint.

Les résultats de la recherche en Afrique, produits par la recherche et les institutions académiques, sont d'ordinaire diffusés dans deux grandes catégories: les résultats de recherche publiés dans les revues scientifiques révisés par des pairs; et les résultats de recherche publiés comme «littérature grise» (c.-à-d. des ressources d'informations et de connaissances non publiées ou publiées par les auteurs, comme les rapports de recherche, les thèses et les mémoires, les papiers de séminaire et de conférence). Nous commençons aussi à voir quelques chercheurs qui «publient» ou communiquent leur travail directement sur Internet, par les blogs, wikis, journaux en ligne, etc.

Une bonne partie de la production de la recherche scientifique d'Afrique est sous forme de «documents» de littérature grise. Ces documents sont produits en nombres limités et sont rarement rendus disponibles sur Internet. Les documents de littérature grise ont une circulation et une visibilité limitées, même au sein des institutions où ils sont produits. Donc, cette littérature importante est non seulement documentée inadéquatement, mais aussi impossible à accéder. Il y a ni bases de données complètes régionales ni nationales que l'on peut utiliser pour localiser et accéder à cette littérature. Le résultat est que ces informations et connaissances scientifiques et techniques valables et très utiles restent inexploitées, et dans beaucoup de cas sont perdues à jamais.

Tristement, très peu de revues locales sont publiées d'une manière régulière en Afrique, et celles qui le sont généralement, sont mal distribuées et manquent de visibilité, bien que cette situation s'améliore lentement avec la réalisation de l'initiative «Journaux africains en ligne» (AJOL). Cependant, du point de vue de la communauté scientifique globale, très peu de la production de recherche d'Afrique trouve son chemin vers les bases de données internationales mondiales bien établies.

Les initiatives Accès ouvert et Archives ouvertes ont un grand potentiel pour ouvrir et améliorer la visibilité des résultats de recherche d'Afrique. Les approches d'Accès ouvert/Archives ouvertes promeuvent l'accès libre illimité et universel via Internet, au matériels érudits

plein-texte et à la recherche scientifique, utilisant des normes inter-opérables qui visent à faciliter la diffusion efficace du contenu et l'accès à ce dernier. Heureusement, les technologies d'information et de communication (TICs) modernes nous fournissent l'infrastructure pour capturer, obtenir et partager un tel capital intellectuel de valeur, à travers le développement et la gestion de bases de données et de dépôts institutionnels.

Malheureusement, en ce moment, Accès ouvert et Archives ouvertes semblent présenter plus de défis que de solutions en Afrique, pour tous les partenaires dans la chaîne de valeur informations/connaissance de la recherche agricole. Les défis clés à surmonter incluent:

- **le manque de compréhension d'Accès ouvert:** l'expérience tirée de l'exécution des projets de réseau d'information en sciences et technologie agricoles qui incluent une provision pour l'Accès ouvert aux documents plein-texte via des dépôts institutionnels, a montré qu'un bon nombre de chercheurs scientifiques, décideurs politiques et documentalistes dans les institutions de recherche agricoles financés par l'état, doit encore comprendre ce que signifie «Accès ouvert». La crainte de l'inconnu a causé beaucoup de chercheurs à refuser de rendre leurs documents disponibles pour l'inclusion dans les dépôts institutionnels. De plus, très peu de chercheurs sont conscients des politiques des éditeurs quant au dépôt de copies pré-et post-impression, de copies PDF d'articles de journal dans des dépôts institutionnels.
- **la méfiance entre chercheurs:** dans quelques institutions de recherche, la compétition à la promotion a eu pour résultat des chercheurs qui ne partagent pas leurs résultats de recherche, surtout ceux-là sous forme de littérature grise, avec les collègues dans les institutions. Car, ils craignent que leurs résultats soient exploités et que leurs collègues puissent publier des articles fondés sur eux. A cause de ceci, certains chercheurs ont refusé d'autoriser le dépôt de leurs rapports dans les dépôts institutionnels.
- **les défis d'infrastructure:** bien que l'ouverture de l'accès aux ressources d'information n'exige pas nécessairement

une infrastructure technique sophistiquée, rendre l'information disponible à une communauté plus large sous formats numériques plein-texte accessibles via les dépôts institutionnels, exige un accès à Internet et une largeur de bande suffisante. La plupart des institutions de recherche publiques n'ont pas un accès à Internet adéquat. Dans quelques institutions, même des réseaux locaux et institutionnels ne sont pas encore en place.

- **les problèmes des droits de propriété intellectuelle (DPI):** il y a quelques institutions de recherche agricoles sur le continent qui n'ont pas mis en place des politiques et des stratégies adéquates pour gérer les DPI. Par ailleurs, certaines institutions n'ont pas la capacité de commercialiser les résultats de recherche qui peuvent avoir une valeur commerciale. Nier, par conséquent, l'accès aux résultats de recherche est devenu dans la plupart des cas, la façon la plus facile et la plus sûre de garantir que ces ressources ne seront pas exploitées par d'autres.
- **les politiques et stratégies institutionnelles d'information:** même dans les cas où les ressources d'information sont disponibles dans les institutions, l'absence de politiques et de stratégies d'information appropriées permet très difficilement aux professionnels de l'information de savoir quelles ressources devraient être partagées ou mises à la disposition pour l'accès sous format numérique.

A la suite des défis mentionnés ci-dessus, la communauté scientifique, les décideurs politiques de la recherche et, jusqu'à un certain point, les spécialistes en gestion de

l'information/la connaissance de la plupart des institutions de recherche publiques, n'ont pas embrassé avec enthousiasme les approches d'Accès/Archives Ouverts. Les dépôts institutionnels et les archives à accès ouvert ne sont pas encore une caractéristique commune de l'environnement de l'information scientifique, numérique, agricole africaine. En général, l'Afrique est à la traîne quant au nombre de dépôts institutionnels et de journaux à accès ouvert, malgré le potentiel énorme que ces initiatives ont pour ouvrir l'accès aux ressources d'informations du continent.

Pour contribuer aux discussions sur les défis mentionnés ci-dessus, le Chapitre Afrique de l'Association internationale des spécialistes d'informations agricoles (IAALD) a tenu une conférence internationale du 15 au 17 juillet 2009 à l'Hôtel M Plaza à Accra au Ghana, sur le thème – Vers l'accès ouvert à l'information et la connaissance pour les sciences agricoles et la technologie en Afrique. A la conférence, les discussions se sont fixées sur les initiatives visant à ouvrir l'accès aux informations et à la connaissance des sciences et de la technologie agricoles, y compris les initiatives Accès ouvert/Archives ouvertes; sur les défis faisant face aux institutions dans le domaine des sciences et de la technologie agricoles en Afrique; et sur la voie à suivre.

NOTES DE L'ÉDITEUR: Les huit articles de ce numéro ont été présentés durant la conférence du Chapitre Afrique de l'IAALD, et ont été sélectionnés par les organisateurs de la conférence pour être publiés dans *Agricultural Information Worldwide*.

Hacia el establecimiento del acceso libre a la información y al conocimiento en el campo de las ciencias y tecnologías agrícolas en los países africanos

Dr. Justin Chisenga, Presidente del Capítulo de IAALD en África y especialista en Manejo de la Información en la Oficina Regional de la FAO para África en Accra, Ghana, trata aquí sobre el gran potencial que tienen la Iniciativa de Acceso Libre y la Iniciativa de Archivos Abiertos para hacer más visibles no sólo los resultados de la investigación realizada en África sino también los desafíos que deben enfrentarse para que ese potencial pueda realizarse.

Los productos de la investigación africana se distribuyen, generalmente, en dos amplias categorías: los que se publican en las revistas científicas arbitradas por pares en todo el mundo, y los que se publican como 'literatura gris', es decir información no publicada o publicada por el mismo autor, al igual que otros recursos de información como informes de investigación, tesis de pregrado y posgrado, y trabajos escritos para seminarios o reuniones. Esta literatura gris es generada por instituciones de investigación o de enseñanza. Igualmente, se empieza a ver que algunos investigadores 'publican' o comunican su trabajo directamente en la Internet mediante bitácoras o 'blogs', 'wikis', revistas en línea y herramientas parecidas.

Gran parte de la investigación científica producida en África se halla en forma de 'documentos' de literatura gris. Estos documentos se producen en cantidades limitadas y rara vez están disponibles en la Internet. Los documentos de literatura gris tienen una circulación y una visibilidad restringidas, aun dentro de las instituciones en que se producen. En consecuencia, esta importante literatura científica no sólo está mal documentada sino que, además, es imposible acceder a ella. No existen bases de datos regionales o nacionales que sean comprensivas y que puedan usarse para ubicar esta literatura y tener acceso a ella. El resultado final es que esa información y esos conocimientos científicos y técnicos, que son muy útiles, no son aprovechados y, en muchos casos, se pierden para siempre.

Lamentablemente, muy pocas revistas locales se publican con regularidad en África, y las que lo son están mal distribuidas, en general, y carecen de visibilidad; sin embargo, esta situación está cambiando, aunque lentamente, gracias a la puesta en práctica de la iniciativa Revistas Africanas en Línea (AJOL, en inglés). No obstante, desde el punto de vista de la comunidad científica global, muy pocos productos de la investigación realizada en África encuentran una salida hacia las bases de datos internacionales comerciales que ya están bien establecidas.

La Iniciativa de Acceso Libre y la Iniciativa de Archivos Abiertos tienen un gran potencial para hacer visibles los

productos de la investigación africana y para mejorar esa visibilidad. Los enfoques de Acceso Libre y de Archivos Abiertos promueven un acceso universal gratuito y sin restricciones al texto completo de materiales tanto académicos como de investigación científica, por medio de la Internet y empleando normas de manejo 'interoperables' cuyo propósito es facilitar la difusión eficaz de esos contenidos y el acceso a ellos. Por fortuna, las modernas tecnologías de información y comunicación (TIC) proporcionan la infraestructura necesaria para captar, asegurar y compartir ese capital intelectual valioso mediante el desarrollo y manejo de bases de datos y de repositorios institucionales.

Es lamentable que, en este momento, el Acceso Libre y los Archivos Abiertos generen, al parecer, más retos que soluciones en África, para todos los que tienen intereses directos en la cadena de valor de la información y el conocimiento en la investigación agrícola. Entre los retos clave que se enfrentan están los siguientes:

- **Falta de conocimiento del concepto de 'acceso libre'.** La experiencia adquirida en la puesta en práctica de los proyectos de redes de información en el campo de las ciencias y tecnologías agrícolas, que incluyen una provisión para el acceso libre a documentos de texto completo que son accesibles en los repositorios institucionales, ha demostrado que un buen número de científicos investigadores, formuladores de políticas y documentalistas de los institutos de investigación agrícola financiados por los gobiernos aún deben aprender qué significa el acceso libre. El temor a lo desconocido ha llevado a muchos investigadores a negarse a entregar sus documentos para que sean incluidos en los repositorios institucionales. Más aún, muy pocos investigadores conocen la política de las firmas editoriales respecto a la colocación de preimpresos, posimpresos y copias en PDF de artículos de revista en los repositorios institucionales.
- **Desconfianza entre los investigadores.** En algunas instituciones de investigación, la competencia para lograr ascensos ha hecho que los investigadores no compartan los resultados de su investigación — especialmente

los que están en forma de literatura gris— con sus colegas dentro de la institución. Esta actitud proviene del temor que tienen de que dichos resultados puedan ser explotados por otros y de que sus colegas puedan publicar artículos apoyándose en tales resultados. Este temor contribuye a que algunos investigadores se muestren renuentes a entregar sus informes a un repositorio institucional.

- **Retos de infraestructura.** Aunque la acción de acceder a recursos de información no exige, necesariamente, una infraestructura técnica compleja, lograr que una comunidad relativamente grande disponga de esa información en formatos digitales que contengan textos completos por medio de repositorios institucionales, implica tener acceso a la Internet con una anchura de banda apropiada. La mayoría de los institutos públicos de investigación no disfrutaban de un servicio adecuado de Internet. En algunos de ellos, aún no han sido instaladas hasta redes de área local y redes a nivel del instituto.
- **Asuntos relacionados con los derechos de propiedad intelectual (DPI).** Algunos institutos de investigación agrícola del continente africano no han establecido ni una política ni una estrategia adecuada para el manejo de los DPI. Otros carecen de la capacidad de comercializar los productos de investigación que pudieran tener un valor comercial. El resultado final es que, casi siempre, la negación del acceso a los productos de la investigación se ha convertido en la forma más fácil y más segura de garantizar que estos recursos no sean explotados por otros.
- **Políticas y estrategias institucionales sobre la información.** Aun en los casos en que los recursos de información estén disponibles dentro de las instituciones, la ausencia de políticas y estrategias de información adecuadas hacen que los profesionales de la información tengan serias dificultades para saber cuáles recursos deberían compartirse o cuáles podrían ponerse a disposición de los usuarios para darles acceso en formato digital.

Frente a los retos antes mencionados, la comunidad científica y los formuladores de políticas de investigación y, hasta cierto punto, los especialistas en el manejo de la información y del conocimiento, en la mayoría de las instituciones de investigación sostenidas con fondos públicos, no han abrazado con entusiasmo los enfoques de Acceso Libre y Archivos Abiertos. Los repositorios institucionales y los Archivos de Acceso Libre no son todavía una característica común del campo de la información científica digital del sector agrícola africano. En términos generales, África va muy a la zaga en el número de repositorios institucionales de acceso libre y de revistas de acceso libre, a pesar del enorme potencial que tienen estas iniciativas para hacer libremente accesibles los recursos de información del continente.

Para contribuir al debate sobre los retos anteriores, el Capítulo Africano de la Asociación Internacional de Especialistas en Información Agrícola (IAALD) organizó una conferencia internacional del 15 al 17 de julio de 2009 en el Hotel Plaza M, en Accra, Ghana, orientada al tema *Hacia la liberación del acceso a la información y al conocimiento en el campo de las ciencias y tecnologías agrícolas en África*. Los temas tratados en dicha conferencia se enfocaron en iniciativas encaminadas a permitir el acceso a la información y a los conocimientos que se encuentran en las ciencias y tecnologías agrícolas. Entre esos temas están los siguientes: las iniciativas del Acceso Libre y de los Archivos Abiertos; los retos que enfrentan en África las instituciones en el campo de las ciencias y tecnologías agrícolas; y la senda que debe transitarse en el futuro.

NOTA EDITORIAL: Las ocho ponencias que contiene este documento fueron presentadas durante la Conferencia del Capítulo Africano de la IAALD; los organizadores de esa Conferencia las seleccionaron para que fueran publicadas en la revista *Agricultural Information Worldwide (Información Agrícola a Nivel Mundial)*.

Enhancing Access and Exchange of Agricultural Information in Kenya: The Case of Kenya Agricultural Research Institute (KARI)

Rachel A. Rege, Patrick Maina, Richard Kedemi and Peninah Mwangi

EDITOR'S NOTE: This paper was presented at the 2nd Conference of the IAALD Africa Chapter, July 15–17, 2009, Accra, Ghana.

KEYWORDS: Information management; agricultural information; agricultural research; Kenya.

ABSTRACT: Public science and technology information is not easily or widely accessible. This limits the impact of research on agricultural and rural development. Kenya is no exception. In the last five years, the government has taken appropriate steps by developing programmes and strategies and formulating policies that prioritize and guide its operations in Information and Communication Management/Technologies (ICM/T). One such initiative is the Kenya Agricultural Information Network (KAINet), which was established to ensure the development of institutional repositories to support availability and access to agricultural information at the national level. This paper seeks to highlight the role of a key KAINet partner, the Kenya Agricultural Research Institute (KARI), in addressing information access and exchange challenges identified through a KAINet needs assessment. The paper also presents achievements and progress in the challenge areas, lessons learned and the evolving KARI national 'intranet' of 42 Centres and sub-centres being interconnected as a major component of KAINet.

RESUMÉ: L'information scientifique et technologique n'est pas facilement ou largement accessible. Ceci limite l'impact de la recherche sur le développement agricole et rural. Le Kenya n'est pas une exception. Ces cinq dernières années, le gouvernement a pris des mesures appropriées en développant des programmes et des stratégies, et en formulant des politiques qui hiérarchisent et dirigent ses opérations au niveau de la Gestion et des Technologies de l'information et de la communication. Une telle initiative est le Réseau d'informations agricoles du Kenya

Introduction

Agriculture is the mainstay of the Kenyan economy. The sector contributes 26% of the Gross Domestic Product (GDP) directly, and another 27% through linkages to agro-based and associated industries. It employs 80% of the total labour force and generates 60% of foreign exchange earnings. It also provides 75% of industrial raw materials and controls 40% of government earnings (Republic of Kenya, 2004).

Pre-independence agricultural research in the East African territories began in 1909. Thus, Kenya has accumulated significant amounts of agricultural data and information relative to some countries in sub-Saharan Africa, but these have not been consolidated. There is

(KAINet), qui a été établi pour garantir le développement de dépôts institutionnels pour soutenir la disponibilité et l'accès aux informations agricoles au niveau national. Cet article cherche à souligner le rôle d'un partenaire-clé de KAINet, l'Institut de recherche agricole du Kenya (KARI), pour s'attaquer aux défis de l'accès à et l'échange de l'information, identifiés par une évaluation des besoins de KAINet. Cet article présente aussi les succès et les progrès dans les secteurs des défis, les leçons apprises et l'évolution de l'« intranet » national du KARI qui connecte ses 42 centres et sous-centres comme un composant majeur de KAINet.

RESUMEN: La información pública sobre tecnología y ciencia no es de fácil acceso ni de fácil diseminación. Esta situación limita el impacto de la investigación en el desarrollo agrícola y rural, y Kenia no es una excepción. En los últimos cinco años, el gobierno ha adoptado medidas apropiadas como el desarrollo de programas y estrategias y la formulación de políticas que dan prioridad y orientan sus operaciones de Gestión y Tecnologías de Información y Comunicación (G/TIC). Una de tales iniciativas es la Red de Información Agrícola de Kenia (KAINet), que se estableció para garantizar el desarrollo de repositorios institucionales que apoyen la disponibilidad de la información agrícola y el acceso a ella, a nivel nacional. Este artículo busca destacar el papel desempeñado por un colaborador clave de KAINet, el Instituto de Investigación Agrícola de Kenia (KARI, en inglés), en la forma de abordar los retos de acceso a la información y de intercambio de la misma, identificados mediante una evaluación de necesidades hecha por KAINet. El artículo presenta además los logros y progresos obtenidos en las áreas en que se plantean los retos indicados, las lecciones aprendidas, y la red nacional interna ('intranet') de KARI en evolución, que cubre 42 centros y subcentros en proceso de interconexión y constituye un componente importante de KAINet.

also limited use of bibliographic control tools and processes to ensure coherence (Republic of Kenya, 1997).

The Kenya Agricultural Research Institute (KARI) is the main agricultural research institute in Kenya, with a network of 42 centres and sub-centres distributed throughout the country in all the agro-ecological zones (see Figure 1). The Institute was established in 1979 through an Act of Parliament to conduct research on food crops, horticulture and industrial crops, animal health, animal production, range management, adaptive research and socio-economic programmatic areas (KARI, 2005). The programmes generate varied research data, information and knowledge that are specific to their subject areas and agro-ecological zones.

In terms of the Institute's organizational structure, the

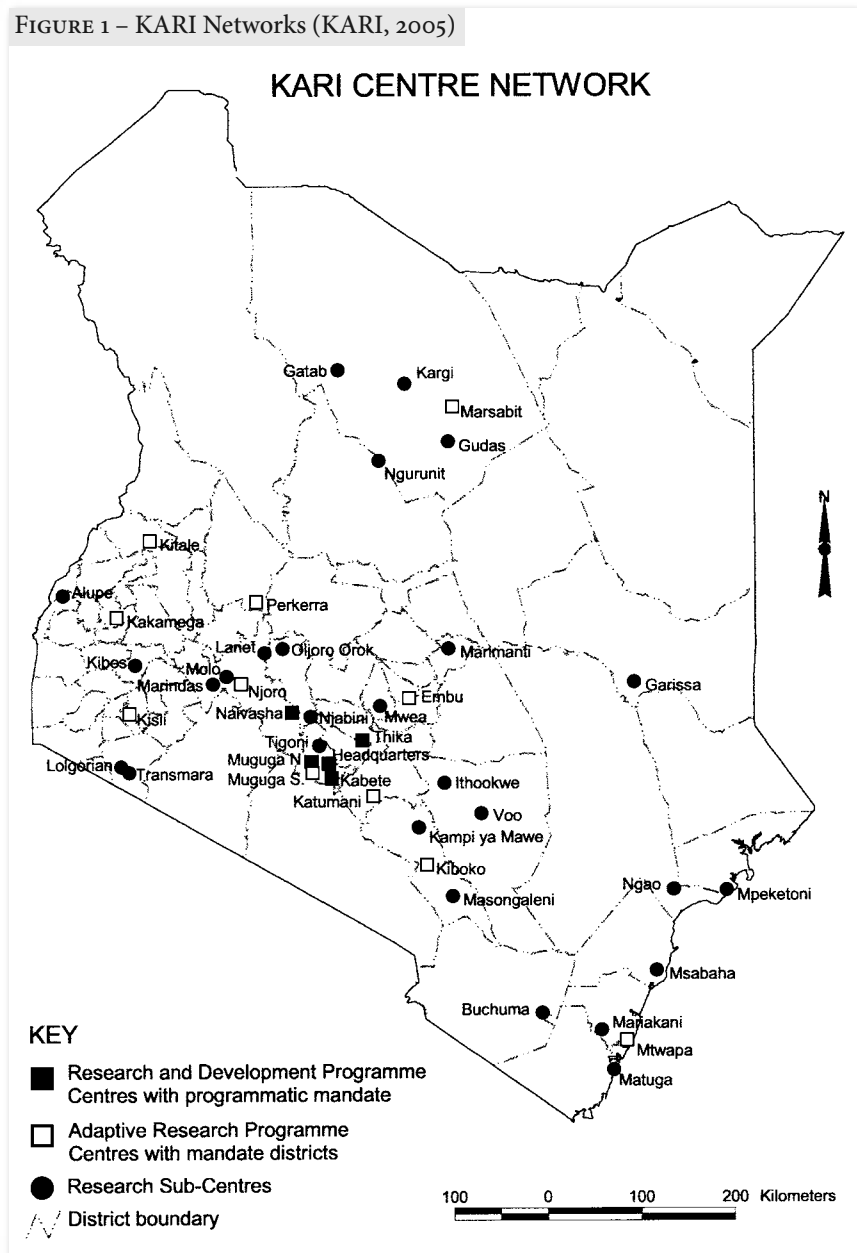
thematic programmes are coordinated from KARI Headquarters (HQ) by Assistant Directors answerable to the Deputy Director in charge of Science and Technology. The Information and Documentation Services programme coordinates all Information and Communication Management (ICM) activities throughout all the centres, including the Kenya Agricultural Information Network (KAINet). The centres are therefore the data collection and information generation access points for stakeholders throughout the KARI network. However, some of the centres have limited information communication infrastructures, constrained ICM human resource bases, and lack basic amenities such as electricity and telecommunications capacities.

KARI also represents the government in most of the regional agricultural associations and forums including the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the Forum for Agricultural Research in Africa (FARA). As a result, KARI has the comparative advantage for coordinating national agricultural information initiatives while contributing at the regional level for a consolidated global impact.

KARI is well recognised by local and international organizations for its contributions within the agricultural sector. It collaborates with international research institutions within the Consultative Group on International Agricultural Research (CGIAR), donor agencies, Non Governmental Organizations (NGOs), and Community Based Organizations (CBOs) to promote agricultural research. The strategic placement of KARI affords the Institute opportunities to spearhead national initiatives in agricultural research in Kenya, as in the case of KAINet. The Institute therefore supports the government in addressing the global agenda at the national level. It also takes advantage of partnerships to broaden its reach and impact. KARI's capacity to influence change lies in its positioning to drive agendas for change. It is within this context that KARI worked with ASARECA, CABI, the Food and Agriculture Organization of the United Nations (FAO) and national partners to set up KAINet.

KAINet is a partnership-based national initiative to facilitate agricultural information harvesting, storage

FIGURE 1 – KARI Networks (KARI, 2005)



and sharing. Current members are national institutions including KARI HQ, KARI National Research Laboratories (KARI-NARL), Kenya Forestry Research Institute (KEFRI), Ministry of Agriculture (MoA), and Jomo Kenyatta University of Agriculture and Technology (JKUAT), and partners including FAO, CABI and ASARECA. These institutions encompass research institutions, specialized research, government ministries and academia. They generate different forms of agricultural information and have their own networks, which will participate in KAINet. The network architecture holds to the Open Access Initiative and AGRIS¹ principles with the aim of improving access to and the visibility of agricultural research publications to maximize their impact. KARI coordinates the activities of the network while working with the national institutions to consolidate research outputs.

The KAINet areas of focus as they relate to the KARI network will be discussed in the implementation section below, with details on what worked and how well it worked, as well as what did not work.

The KAINet Concept Origin and Evolution

Information is a major input in the agricultural production-to-consumption continuum. There is therefore an urgent need to support ICM strategies that will facilitate improved access to and exchange of information. Kinara (1984) noted that such approaches should ensure exchange between policy-to-research and research-to-research levels and adequately address issues of food security and development in the country. These are some of the challenges that necessitated the promotion of AGRIS at the global level and KAINet at the regional and national levels.

KAINet is based on the AGRIS principles (FAO, 2003), which require the following:

- International and multilingual capabilities.
- Centralized collection of bibliographic details of outputs and activities of national agricultural research programmes, especially non-conventional (grey) literature.
- Coordination, tools and methodologies, data processing, training and technical backstopping by FAO.
- Common ownership of data, with free access to the collective information base for participating AGRIS centres.
- Decentralized approach.
- Diversity of research organizations.
- Full-text of documents and inclusion of associated information about activities and web-enabled AGRIS methodologies and tools.

In keeping with the above principles, KAINet facilitated the development of institutional strategies that provide a framework within which Information and Communication Management/Technologies (ICM/T) issues are effectively addressed. In line with this, KARI developed an ICM/T strategy that governs the operations of all of its 42 centres and sub-centres. This has streamlined the collection, generation, processing, dissemination and sharing of agricultural information resources throughout the Institute. It has also supported the provision of resources required for mapping and gaps identification throughout the Institute. It is believed that KAINet's experience will provide lessons to be shared with others in the ASARECA region with activities linked to priorities of sub-regional research networks (ASARECA-RAIN, 2005).

KAINet uses AGRIS tools and methodologies, which are mainly based on open access principles to ensure coherence of content, sustainability of the system and ease of adoption with low budgetary requirements. Further, the methodologies and tools have evolved over time to

capitalize on new developments in the global information communication arena. KARI adopted the same tools and methodologies at KARI HQ and KARI-NARL, with long term plans to roll out the same to the rest of the centres within KARI.

At the national level, KAINet collaborates with different national institutions in a network. Within KARI, the KARI Intranet, comprised of all 42 centres and sub-centres, contributes to KAINet. The KARI network mirrors the KAINet network, although at a lower level. Integration of the institutions into a network involved consensus building, role specification and capability mapping, which have also been carried out within the KARI centres in preparation for the roll-out of KAINet beyond KARI HQ and KARI-NARL. The same principles apply, although within KARI, it is the same ICM strategy providing the framework for operation. The challenge in setting up the KARI network is the high cost of the infrastructure required for the whole network. This necessitated the adoption of a cascade approach to infrastructure acquisition and implementation.

The scope of information collection in KAINet comprises annual reports, research reports, journal articles, technical notes, manual and technical procedures, conference proceedings, project reports, theses and evaluation reports. These are the same materials generated and reported by KARI centres, and are thus included in the KARI institutional repository. Consolidation of this information for retrieval from the KARI repository enhances access, availability, visibility and exchange of agricultural information from the whole of KARI's network. The same content is available through the FAO AGRIS global database for a wider client base, thus enhancing visibility of KARI's information content at the global level.

There are a number of other initiatives that support the AGRIS principles. Among them is Coherence in Information for Agricultural Research for Development (CIARD), a global initiative working to make agricultural research information publicly available and more accessible. KAINet participates in the CIARD initiative.

The following section highlights the activities KARI has undertaken to support the development of the KARI network and to ensure sustainability while contributing to the objectives of KAINet.

Implementation Framework – The development of KAINet started with preliminary studies that were carried out at KARI HQ and KARI-NARL to map out the institutional and ICM staff requirements for the implementation of the network. It was observed that KARI had generated a lot of research data, information and knowledge from all of its programmes. Most of this information is in different locations and in varying formats, which makes it difficult to access and share. To address these challenges, a consultant was hired to build the capacities of ICM staff on strategy formulation. This was done in a participatory manner and now KARI has

a draft ICM strategy aligned to national, sectoral and institutional strategies to support adequate resource allocation and guide the implementation of ICM activities throughout the KARI network. Other strategic issues addressed at the same time include open access, marketing of information products and services, and monitoring and evaluation. In the roll-out phase, active sensitization of the stakeholders on the activities stipulated in the ICM strategy will be necessary.

KAINet has involved several partners including FAO, ASARECA, CABI and national institutions including the Ministry of Agriculture, KEFRI and JKUAT, KARI HQ and KARI-NARL. The partnership approach was adopted to support the project implementation in the network. In the KARI network, this has been implemented through the involvement of all KARI centre teams in the project activities. To ensure success, the teams' formation required stipulation of roles and responsibilities.

The project teams include researchers, managers, librarians, information technologists, graphic designers, science editors and support staff. Each of these clusters had a role to play in the overall process of project implementation and have also contributed to team spirit and project ownership. In a way, this approach also ensured project sustainability; the teams are empowered through their participation and enhanced understanding of the project.

With regard to capacity building, the project supported KARI in getting additional equipment to set up the e-repository. The equipment included servers, computers, and scanners, which have facilitated the digitization of research data and information for consolidation. In the same vein, use of WebAGRIS for documents management and online availability has been promoted for document processing, availability and exchange. The use of controlled vocabularies and thesauri has also ensured standardization of records and documents exchange. In streamlining document collection, processing and digitization for quality assurance and consistency, the KARI team formulated a workflow to guide the process (Figure 2). All of these tools and methodologies are Open Access thus eliminating additional costs by providing a viable solution to the network operations. The application of standards including the AGRIS application profile, AGROVOC Thesaurus, WebAGRIS, Dublin Core Metadata, and ISO2709 also ensure information accessibility and exchange.

The establishment of a central KARI institutional repository provides a framework through which KARI avails consolidated information resources. So far the repository has a total of 840 metadata records and 400 full-text records, all available to staff through the website and the institutional Local Area Network (LAN). As KARI consolidates its records at the institutional level from its centres, it contributes the same to both KAINet and the AGRIS global database. This enhances the visi-

bility of KARI research information and the individual scientist's profile. There is still a need for sensitization of researchers to submit publications, digitization of past records, and ICT and human resource support at remote centres throughout KARI.

Achievements – The KARI network has formulated a draft strategy, set up an AGRIS database and website, applied AGRIS application standards and instituted a better document management system that has enhanced access to information and exchange within the Institute and beyond. It is expected that the rest of the centres will be brought on board in a phased approach, with those nearer to KARI Headquarters going first, followed by those that are the furthest away. In the challenge areas, the programme is partnering with other programmes within KARI to support equipment acquisition, publication collection and digitization, capacity building and training. The KARI Director is also supporting the finalization of the ICM strategy presentation to stakeholders and finalization to press.

Lessons Learned

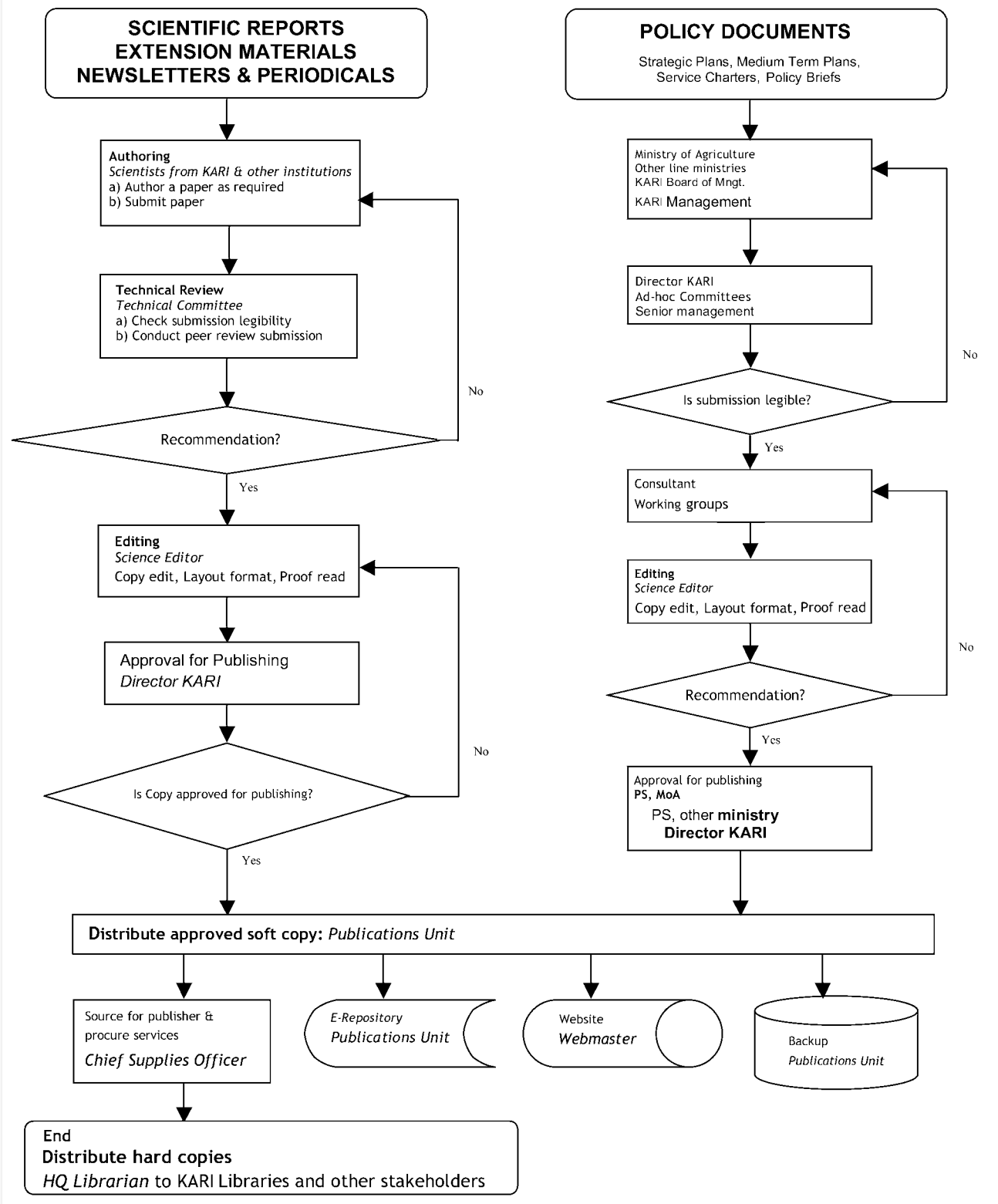
Throughout the process of establishing the network, the following lessons were learned:

- Local knowledge sharing is important for building (a) partnerships for improved performance and ownership, (b) sustenance of online communities of practice and alliances, (c) development and adoption of programmes in consultation with stakeholders in response to local requirements, and (d) better management of information resources through ICT applications.
- Commitment and goodwill of top management and a sector policy framework ensured the success of the network implementation process. For example, when KAINet came into being, it benefited from the newly formulated national ICT policy and the sector strategy recognizing the role of ICM in agricultural development.
- Partnership and change is easily accepted when it comes from diverse players for a common goal, as in the case of KAINet

Recommendation and Conclusion

Information is now recognized as one of the world's most important resources; it exists in every organizational enterprise throughout the world. Increasingly, the degree of success enjoyed by organizations and the people who work for them depends on how well information resources are managed (Robek, Brown, and Stephen, 2002). It is therefore imperative for research institutions, including KARI, to manage their information resources for development and impact through the formulation of appropriate strategies and policies, availability of adequate funding for information and communication activities,

FIGURE 2 – Digitization Work Flow (KARI workflow)



adequate technology support to enhance networking, efficient content management, adequate human resource base, use of standards to ensure coherence and content availability, and to build partnerships for an integrated whole.

It is also noted that information has different characteristics, depending chiefly on form, usage and value. It has no value unless it is used. In order for it to be used effectively, it must be readily accessible to those who need it. Therefore, the KARI 'intranet' needs to be fully

functional for KAINet to achieve its potential. Effective communication among network members is essential to maximize impact for development, but critical amongst these is the participatory involvement of all in planning and network sustainability.

Evaluation of partners to ascertain their capacity in content generation, information communication infrastructure base, human resources and preparedness to adopt and support the Open Access Initiative is a critical consideration in the roll-out phase.

Clear partnership roles definition, capacity building and sustainability plans consideration are important when bringing in new partners. Within this context, the KARI network has a clearer action line since all the centres are under a common management structure, unlike KAINet. For better understanding and effective implementation, document processing workflow should be prepared by staff in the initial phases of the project.

KAINet's prospects for success at achieving its objectives appear to be quite good if all its members build internal networks based on the AGRIS principles and ensure rigorous publication collection and sustainability from the institutional level to the national level networks.

Acknowledgements

We acknowledge the support of all the partners, including ASARECA, FAO, CABI and the national partners including the Kenya Forestry Research Institute (KEFRI), Jomo Kenyatta University for Agriculture and Technology (JKUAT), Ministry of Agriculture, KARI National Research Laboratories (KARI-NARL), and KARI Headquarters, for being part of the team supporting KAINet, under whose umbrella, KARI is a beneficiary. We also recognize the financial support provided by the Department for International Development (DFID) and the good will support from all the institutional directors and the chancellor. Special recognition goes to the KARI Director, Dr. Ephraim Mukisira, for his solid support and leadership.

Notes

1. International Information Systems for Agricultural Science and Technology, <http://www.fao.org/agris/>

Cited References

ASARECA-RAIN. 2005. *Needs assessment studies*. Entebbe, Uganda: ASARECA.

Food and Agriculture Organization of the United Nations (FAO). 2003. *AGRIS—A Strategy for an International Network for Information in Agricultural Sciences and Technology within*

the WAICENT Framework (Information Document—Second Consultation on Agricultural Information Management, September 23–25, 2002, Rome, Italy). <http://www.fao.org/docrep/meeting/005/ac502e.htm>

KARI Strategic Plan 2005–2015: Agricultural Innovations for Sustainable Development. http://www.kari.org/fileadmin/Strategic_Plans/KARISPlan2005-2015.pdf

Kinara, A. M. 1984. *Information Communication in Kenya agriculture: Basic problems and possible solutions*. Nairobi: Africa Book Services.

Republic of Kenya. 1997. *Assessment of Information needs and options for information management*. Ministry of Agriculture, Livestock Development and Marketing Report. Nairobi: Government Printers.

Republic of Kenya. 2004. *Strategy for Revitalizing Agriculture 2004–2014*. Ministry of Agriculture and Ministry of Livestock and Fisheries Development. Nairobi: Government Printers.

Robek, M. F., F. F. Brown, and D. O. Stephen. 2002. *Information and records management: document based information systems*. New York: Glencoe.

Additional Reading

Coherence in Information for Agricultural Research for Development (CIARD) Manifesto: Towards a Knowledge Commons on Agricultural Research for Development. 2008. <http://www.ciard.net/index.php?id=573>

FAO. 2002. *Report of the Second Consultation on Agricultural Information Management (COAIM)*, September 23–25, 2002, Rome, Italy. <http://www.fao.org/docrep/MEETING/005/Y7963E/Y7963Eoo.HTM>

FAO. 2007. *Report of the 2nd Expert Consultation: International Information Systems for Agricultural Science and Technology*, September 23–24, 2007, Rome, Italy. http://www.ciard.net/fileadmin/uploads/CIARD/CIARD_documents/2Excon-report.pdf

AGRIS Pilot Project. 2006. *Needs Assessment Report of Kenya AGRIS Pilot Project*. Nairobi, Kenya.

THE AUTHORS are all affiliated with the Kenya Agricultural Research Institute (KARI), Nairobi, Kenya.

Contact Information

Rachel A. Rege
Assistant Director
Information and Documentation Services
Kenya Agricultural Research Institute (KARI)
P.O. Box 57811-00200
Nairobi
KENYA
PH: +254-204183301-20 Ext. 2228
E-mail: rrege@kari.org
Web: www.kari.org

Open Access Publishing: Views of Researchers in Public Agricultural Research Institutions in Zambia

Justin Chisenga and Davy Simumba

EDITOR'S NOTE: This paper was presented at the 2nd Conference of the IAALD Africa Chapter, July 15–17, 2009, Accra, Ghana.

KEYWORDS: Open Access, Agricultural Research, Zambia.

ABSTRACT: The main goal of the study was to explore and examine the views on open access (OA) publishing of researchers involved in agricultural research to establish whether there is support for OA among the researchers in Zambia. Survey questionnaires were distributed to 67 researchers in three publicly funded research/academic institutions. Forty researchers (59.7%) completed the questionnaire. About 83% of the respondents supported the basic principle of OA, i.e. provision of barrier-free and cost-free access to research literature for all individuals interested in the literature, and an overwhelming number of them (90%) indicated their willingness to publish in OA journals. At least 68% of the respondents said that they would support the policies of research institutes, the government and donor agencies funding research to have publications from research activities deposited in institutional repositories that are OA archives. These results are very encouraging for OA initiatives in the country.

RESUMÉ: L'objectif principal de l'étude était d'explorer et d'examiner l'avis sur la publication en accès ouvert (AO) des chercheurs impliqués dans la recherche agricole pour établir si ces derniers sont favorables à l'AO en Zambie. Les questionnaires d'enquête ont été distribués à 67 chercheurs dans trois institutions de recherche / académiques subventionnées publiquement. Quarante chercheurs (59.7%) ont complété le questionnaire. Environ 83% des répondants a soutenu le principe

fondamental d'AO, c.-à-d. la provision d'accès libre et gratuite à la littérature de recherche pour tout individu intéressé par cette littérature, et un nombre écrasant d'eux (90%) a indiqué leur volonté de publier dans les journaux d'AO. Au moins 68% des répondants disent qu'ils soutiendraient les politiques des institutions de recherche, des agences de gouvernement et de donateurs subventionnant la recherche, en vue d'avoir un dépôt de publications sur les activités de recherche dans les dépôts institutionnels qui sont les archives d'AO. Ces résultats sont très encourageants pour les initiatives d'AO dans le pays.

RESUMEN: La meta principal del estudio fue buscar primero, y examinar luego, las opiniones de los investigadores involucrados en la investigación agrícola sobre la publicación de materiales de acceso libre (AL), para saber si los investigadores de Zambia apoyarían el AL. Se entregaron cuestionarios de encuesta a 67 investigadores en tres instituciones dedicadas al trabajo académico y a la investigación y financiadas con dineros públicos. Cuarenta investigadores (59.7%) respondieron el cuestionario. Cerca del 83% de los encuestados apoyaron el principio básico del AL, que consiste en permitir un acceso sin barreras y sin costo a la literatura sobre investigación a todos los individuos interesados en esas obras; además, un número abrumador de ellos (90%) manifestó su voluntad de publicar en revistas que practican el AL. Al menos 68% de los encuestados señalaron que apoyarían la política de los institutos de investigación, del gobierno y de las entidades donantes que financian la investigación dirigida a lograr que las publicaciones sobre actividades de investigación sean colocadas en repositorios institucionales que serían archivos de AL. Estos resultados son muy alentadores para las iniciativas de AL en ese país.

Introduction

Open Access (OA) is free and unrestricted online availability of scientific literature (Budapest Open Access Initiative, 2002), and according to Suber (2007), open access removes “price barriers” (e.g., subscription fees to journals) and “permission barriers” (e.g., copyright and licensing restrictions) to “royalty-free literature” (i.e., scholarly works created for free by authors), making them available with “minimal use restrictions” (e.g. author attribution).

The basic principle of open access is the provision of barrier-free and cost-free access to *research literature* to all individuals interested in the literature. Further, Swam (n.d.) states that *open access research literature* is composed of free, online copies of peer-reviewed journal articles and conference papers as well as technical reports, theses and working papers.

There are two primary open access approaches:

- Publishing articles in open access journals (OAJ). In May 2009, the Directory of Open Access Journals (www.doaj.org/) listed over 4,000 open access journals, of which about 230 covered subjects in the agricultural sciences;
- Depositing copies of articles, post-print or pre-print manuscripts by the authors in open access archives (OAA) or repositories. This is also called *self-archiving*. Several authors have highlighted the benefits associated with providing open access to research literature. Among the benefits are the following:
 - Open access has been shown to increase the visibility, access and the impact of papers in terms of citations (Lawrence, 2001; Swan and Chan, n.d.);
 - Open access to research can lead to improvement in the quality of research via improved communication of research results (Organic EPrints, n.d.);
 - Countries benefit because open access increases the

impact of the publicly-financed research (Houghton & Sheehan, 2006).

- Open access can help to bridge the content divide by increasing access to scholarly literature, thereby facilitating the sharing of knowledge among different socioeconomic groups.

Despite resistance from some publishers (Gawrylewski, 2008), providing open access to published research is gaining support from different types of organizations from around the world:

- Parliamentary committees, e.g. the United Kingdom (UK)'s House of Commons Science and Technology Committee (Pincock, 2004) and the U.S. House of Representatives' Appropriations Committee (Suber, 2006);
- Bodies funding research like the Wellcome Trust (n.d.);
- International development agencies such as the International Development for Research Centre (IDRC) of Canada and to some extent the UK Department for International Development (Arunachalam, 2009); and
- Universities such as the University of Pretoria in South Africa (Suber, 2009) and University of Southampton (Lewis, 2008).

The aforementioned organizations have all in one way or another supported the basic principle of open access by advocating for or implementing policies and mandates that support and encourage open access to research literature initiatives.

Publishing in OAJs and self-archiving by agricultural researchers have great potential to enhance the visibility of and access to content generated in the agricultural sciences and technology field in Africa, and to facilitate the sharing of knowledge among the scientists on the continent and with the global scientific community.

However, the success of OA initiatives in Africa will depend on, among other things, the extent to which researchers and/or their institutions support the basic principle of open access and their willingness to publish in OAJs and deposit their publications in open archive repositories. Print-based repositories of documents, i.e. libraries and documentation centres, in most publicly funded research institutions in Africa are literally empty of local content. Most do not have comprehensive collections of the documents generated by their own researchers. One major contributing factor to this state of affairs has been that researchers, for various reasons, seem to prefer to keep copies of their research, i.e. journal articles, conference papers, technical reports, and so forth, in their offices rather than deposit them in their institutions' libraries and documentation centres where they can be accessed by a wider audience. This situation is even worse when it comes to grey literature, i.e. material that is not formally published, such as institutional or technical reports, working papers, business documents, conference proceedings, or other documents not normally subject to editorial control or peer review (Quantum 3, n.d.). Yet much of the scientific research

output from Africa is in the form of grey literature 'documents' that are produced in limited numbers and have limited circulation and visibility even within the institutions where they are produced.

Objectives of the Survey – This paper is based on a survey that was conducted in Zambia in January and February 2009. The main objective of the study was to explore the views of researchers involved in agricultural sciences and technology regarding OA publishing, with the aim of establishing whether there is support for open access among researchers in the country. The specific objectives of the survey were to obtain information on researchers':

- Experience in publishing
- Awareness of open access
- Views on the basic principle of open access
- Experience with publishing online
- Future intentions to publish as open access

Methods

SAMPLING – Research in agricultural sciences and technology in Zambia is carried out by several institutions. Beintema et al (2004) identified 16 agencies involved in agricultural research that employed 179 full-time equivalent (fte) researchers in 2000. The institutions include those affiliated to government ministries, private and public sector partnerships, and private organizations. The key institutions currently involved in agricultural research in the country are:

- **Ministry of Agriculture and Cooperatives**
 - *Zambia Agricultural Research Institute (ZARI)*: the main agricultural research agency in the country. ZARI carries out research activities in soils, crops, plant protection and farming systems.
 - *Central Veterinary Research Institute (CVRI)*: for research in livestock production and diseases, production of vaccines.
 - *Central Fisheries Research Institute (CFRI)*: for research in technologies in support of sustainable fisheries resource management and increased productivity in aquaculture.
- **Ministry of Science and Technology and Vocational Training**
 - *National Institute for Scientific and Industrial Research (NISIR)*: for research in livestock production and diseases, food technology, forestry and under-utilised plants, and water resources.
 - *National Science and Technology Council (NSTC)*: for coordination, promotion, and regulation of research, and advising government on science and technology policy and development. NSTC also funds research.
- **Ministry of Education**
 - *University of Zambia*: School of Agricultural Sciences (crop sciences, soil sciences, animal sciences and socio-

economics) and the School of Veterinary Medicine (veterinary medicine, including pets and inland fisheries).

- *Copperbelt University*: School of Natural Resources (forestry, wood science, wildlife management and fisheries management).
- **Ministry of Environment and Natural Resources**
 - *Forestry Department*: for research in forestry, conservation and management of forestry resources.
- **Private and Public Sector Partnerships**
 - *Golden Valley Agricultural Research Trust (GART)*: for research in conservation tillage, livestock-crops interaction, soil fertility improvement.
 - *Cotton Development Trust (CDT)*: for research in cotton.
 - *Livestock Development Trust (LDT)*: for research in livestock.
- **Private Organizations**
 - *ZamSeed*: maize research.
 - *Maize Research Institute*: maize research.
 - *Dunavant*: cotton research.

Due to limited time and resources, only researchers in the following key public research/academic institutions, all located in Lusaka Province, were surveyed:

- **ZARI**: Mount Makulu Central Research Station (ZARI headquarters) in Chilanga;
- **NISIR**: Livestock and Pest Research Centre at Chilanga and NISIR headquarters along Lusaka International Airport Road; and
- **University of Zambia**: School of Agricultural Sciences and School of Veterinary Medicine.

Participation in the survey was voluntary and open to all researchers in the above three institutions. At the time the study was conducted, there were an estimated 90 research staff spread across the three target institutions, distributed as follows: 35 at the Schools of Agriculture and Veterinary Medicine, 30 at NISIR, and 25 at ZARI.

DATA COLLECTION – Data was collected using a questionnaire that sought information regarding the researchers’:

- Experience in publishing, including number of publications (i.e. journal articles, books, chapters in books, and papers in conference proceedings) and the main reason for publishing;
- Awareness of OA and publishers’ policies that allow self-archiving of publications in open access institutional repositories;
- Views on the basic principle of OA and whether the researchers would support initiatives and policies promoting it;

TABLE 1 – Distribution of Questionnaires

Institution	Number of researchers	Questionnaires distributed	Questionnaires returned	Response rates
ZARI	25	20	14	70%
NISIR	30	20	10	50%
UNZA	35	27	16	59%
Totals	90	67	40	59.7%

- Experience with publishing online;
- Future intentions to publish as OA, including the willingness to deposit/ publish in OAJs, institutional repositories, on personal and/or institutional websites, and so forth.

A two-page fact sheet on the Open Access Initiative, OA strategies, OA publications, advantages of OA and some definitions, i.e. copyright license, institutional repository, post-print, pre-print, grey literature, etc., related to OA was provided to help participants unfamiliar with OA and its associated terminologies.

The questionnaire was pre-tested at Mount Makulu Central Research Station in early December 2008 and valuable input was received from five researchers (2 doctorate and 3 master’s degree holders). After revision, the questionnaires were distributed in the three institutions. They were distributed to and collected from researchers in person.

Results

The research team distributed 67 questionnaires, which represents about 74% of the target population at the three target institutions. The distribution of the questionnaires is shown in Table 1.

The overall response rate was 59.7%. It could have been higher, but unfortunately, at the time the questionnaires were collected, some researchers were out of the country, others were on leave and some had misplaced or not completed the questionnaire.

Highest Academic Qualifications – Out of the 40 researchers that completed the questionnaires, 11 (27.5%) had doctorate degrees, 22 (55%) had master’s degrees, and 6 (15%) had bachelor’s degrees as their highest qualification. One researcher (2.5%) did not indicate the highest academic qualification held.

Experience in Research – The number of years the researchers had been involved in agricultural research activities ranged from less than 5 years for 12 (30%) of the researchers to more than 20 years for 13 (32.5%). Eight (20%) of the researchers had at least 5 years experience, 3 (7.5%) at least 11 years, and 4 (10%) at least 16 years experience. One researcher (2.5%) did not indicate the length of experience in agricultural research.

Funding for Research Activities – For 23 (57.5%) of

the researchers, funding for their research activities was provided by the Government of Zambia, while 3 (7.5%) indicated that they obtained funding from donor agencies through arrangements with the Government of Zambia, and 8 (20%) from donor agencies through arrangements with their parent institutions. Five (12.5%) of the researchers indicated that their research activities were funded by private organizations, while one (2.5%) indicated other sources of funding for research.

Areas of Specialization - The areas of specialization for the researchers varied widely. They included Agricultural Economics (7 researchers), Soil Science (6), Veterinary Medicine (5), Crop Protection (5), Agronomy (3), Biotechnology (3), Plant Breeding and Genetics (3), and one each for Horticulture, Plant Pathology, Radiation Processing, Environmental Protection, and Food Science. Three respondents (7.5%) did not indicate their areas of specialization.

Publishing Experience – Regarding publishing outputs of research in various types of publications, 21 (52.5%) of the respondents indicated that they had published their research in the form of journal articles, 9 (25.5%) had published books, 15 (37.5%) had chapters in books, and 28 (70%) had presented papers at conferences.

The number of publications by the respondent in each of the above categories varied and is shown in Table 2.

Reasons for Publishing – The main reason for publishing research outputs for 23 (57%) of the researchers was to communicate with their peers, while 5 (12.5%) indicated that it was to advance their careers and the same number indicated that it was required by their employers, and required by the funders of their research. Two researchers (5%) did not give the main reasons for publishing their research outputs.

Awareness of Open Access – At the time of the survey, 21 (52.50%) of the researchers indicated that they were not familiar with OA before their participation in the survey, while 15 (37.5%) had some knowledge of it. Four (10%) of the researchers did not indicate whether they were familiar with OA before the survey.

Publisher Copyright Policies and Self-Archiving – Of the 15 researchers that had some knowledge about

Box 1 – Why support Open Access?

Research will be worthless if the results cannot be used to improve quality of life and make the world a better place. This can only be achieved if research findings are accessible to all.

OA prior to the survey, 14 (93.3%) indicated that they were also aware of some of the publisher copyright policies on self-archiving of research publications in OA institutional repositories. Overall, 24 (60%) of the researchers out of the 40 respondents were not aware of such policies, and one (5%) did not indicate whether they were aware of publisher policies on self-archiving.

Support for Open Access Publishing – Thirty-three (82.5%) of the researchers indicated that they supported the basic principle of OA, including the idea of providing open access to research outputs published in scholarly journals by agricultural research scientists in Zambia. The support was for various reasons (see Box 1). Seven (17.5%) of the researchers were not sure whether they would support open access to scientific literature.

Support for Open Access Policies – Twenty-seven (67.5%) of the researchers said that they would favor a policy by their institution requiring them to deposit their publications in an OA institutional repository; 31 (77.5%) would favor a policy by the Government of Zambia requiring all publications from research funded by the government to be deposited in an OA repository, and 28 (70%) would favor a policy by donor agencies funding research that would require that all publications from the research they funded be deposited in an OA repository. Some of the reasons given by the respondents for favoring OA policies are given in Box 2.

Three (7.5%) of the respondents indicated that they would *not support* government policies requiring the deposit of research publications in OA repositories. Two (5%) would *not support* institutional or donor agency policies. Nine (22.5%), 6 (15%) and 10 (25%) were *not sure* as to whether they would support OA policies by their

TABLE 2 – Types of Publications by the Respondents

Number of Publications	Number of Researchers			
	Journal Articles	Books	Chapters in Books	Conference Papers
0	19	31	25	12
< 5	14	8	14	17
5–10	4	1	0	4
11–15	0	0	1	3
16–20	3	0	0	2
> 20	0	0	0	2

Box 2 – Some reasons for favouring OA policy

- To avoid duplication of work;
- Public funds for public benefits;
- If the research is being carried out using public funds then it should be accessible to the public free of charge;
- That is the only way the government can have an indicator on how the resources are being utilized.

institutions, government or donor agencies, respectively.

Experience with Online Publishing – Ten (25%) of the researchers indicated that they were aware of some of their publications, in full-text, being made available for access on the Internet. Six (15%) of the researchers had personally posted some of their publications on the Internet, while 7 (17.5%) indicated that they had in the past given permission to requests to have their publications made accessible on the Internet. Fifteen (37.5%) indicated that if asked, they would grant permission to have their publications made available on the Internet.

Knowledge of Open Access Journals – Nineteen (47.5%) of the researchers had knowledge of some OAJs in their fields of specialization or areas of research, while the remaining 21 (52.5%) had no knowledge of OAJs in which they could publish their research.

Publishing as Open Access – Thirty-six (90%) of the researchers said that they would consider publishing their articles in OAJs, for some of the reasons indicated in Box 3. In addition, the figures below show the number of researchers who were willing to deposit full-text copies of their *articles that have appeared in peer reviewed journals* in an institutional repository, any type of repository, personal website and/or institutional websites, for OA by users over the Internet:

Institutional Repository	14 (35%)
Any Repository	14 (35%)
Personal Website	7 (17.5%)
Institutional Website	22 (55%)

Researchers were also asked to indicate their willingness to deposit or publish full-text copies of any of their *grey literature* for OA by users over the Internet in any of the following and the YES responses were almost the same as those for journal articles:

Institutional Repository	15 (37.5%)
Any Repository	9 (22.5%)
Personal Website	6 (15%)
Institutional Website	19 (47.5%)

Overall, only one researcher (2.5%) would not publish articles and 5 (12.5%) would not publish their grey literature in any of the above.

Discussion

Although the study is subject to several limitations, such as non-inclusion of all the researchers involved in agricultural sciences and technology in the country, the researchers who participated in the study could be said to constitute a representative group of researchers in-

Box 3 – Why publish in OAJs?

- More people will be able to read my articles;
- I want my research results to be accessed by many;
- I would like more people to have access to my work;
- It will allow me to share with peers worldwide.

involved in agricultural sciences and technology in Zambia.

As indicated above, the goal of the study was to explore the views of researchers involved in agricultural sciences and technology (AS&T) research on OA publishing, with the aim of establishing whether there is support for OA among the researchers in the country. The following sections discuss the areas covered by the survey.

Experience with Publishing –

The main mode of communicating research for centuries has been through publishing in scientific journals, but the study shows that a good number of the researchers in Zambia are not publishing in journals. Almost 50% of the respondents had no publications in scientific journals. Using cross tabulation of the data, it was further found that 6 respondents who had been involved in research for at least 15 years had not published any journal articles.

The above situation can be attributed to a number of factors, including the fact that over the past 10 years, there has been a reduction in research funding from the government in Zambia. Out of the 23 respondents who had indicated the government as their main source of funding for research activities, 16 (69.5%) had not published any journal articles, while all 5 (100%) of the respondents who got funds from private organizations had journal articles to their credit and 8 (72.7%) out of the 11 respondents who received funds from donor agencies (either through the government or their organizations) also had published journal articles.

Communication of research outputs through conference papers appeared to be the major mode used by most researchers in the country. Only 12 (30%) of the respondents indicated that they had never presented a paper at a conference. This indicates that research literature in Zambia could be mainly available as grey literature that could be deposited in OA institutional repositories.

Awareness of Open Access – About 53% of the researchers who took part in the survey were *not aware* of OA publishing before their participation in the survey. Lack of awareness of OA could have a negative impact on efforts to launch OA initiatives in the country and on the willingness of researchers to deposit their works in institutional repositories. Therefore, there is a strong need to sensitize researchers in the country about OA, institutional repositories and some of the publisher policies on self-archiving that will allow them to archive some of their works in institutional repositories.

Views on Open Access – Overall, the researchers' views on OA were very positive and encouraging. This is evidenced by the relatively high number of researchers, about 83%, who indicated that they supported the basic

principle of OA, and the strong support for policies to have publications from research activities deposited in institutional repositories that are OA archives. This strong support was 68% for policies by research institutes, and 78% and 70% for those by government and donors, respectively.

Researcher support for OA and their willingness to make their research outputs available via OA repositories is vital to the success of OA initiatives in Zambia, and Africa in general.

Experience with Online Publishing – At the time of the study, very few researchers had personally published works on the Internet that were available for free and unrestricted access. In general, it should be noted that online publishing of scientific literature or any other types of academic publication in the country has not yet taken root mainly due to a lack of adequate access to reliable Internet facilities. Very few researchers have personal websites where they can make their works available for access to the global community. In addition, the institutions themselves are not publishing online. For example, universities and research institutes in the country have yet to establish full-text digital repositories of materials generated by their researchers or graduate students, and there are no databases of Electronic Theses and Dissertations (ETDs) that can be accessed online.

However, based on the results of the study, there is great potential and a willingness among research scientists to publish as OA and this should be exploited by the research and academic institutions, as well as by information professionals.

Future Intentions to Publish as Open Access – An overwhelming number of the respondents, 36 (90%), indicated that they would consider publishing their research as OA, mainly in an OAJ. This is very encouraging because publishing in OAJs is one of the two main strategies for achieving and promoting open access to scientific literature.

Providing access to published research literature on institutional websites also got very good support from the researchers. About 55% of the respondents indicated that they would consider providing access to their published research on their institution's website.

However, publishing or depositing grey literature materials in institutional repositories or on personal and/or institutional websites did not receive the same kind of overwhelming support. There could be several reasons this dichotomy. These include the following:

- In most cases, research scientists place high priority on publications in refereed journals because these contribute high points to their promotion and career advancement. Therefore publishing in OAJs will be the preferred option for most researchers.
- Grey literature such as technical reports, research reports and conference papers is sometimes seen as “raw literature” that could later be turned into journal articles. For some, depositing them into an OA repository

or making them available on personal or institutional websites is not seen as publishing in the “publish or perish” context and is therefore not taken into account when applying for promotion.

- There is also a general fear that grey literature made available on the Internet could easily be plagiarized.

Conclusion

A large number of the respondents supported the basic principle of OA, i.e. provision of barrier-free and cost-free access to research literature to all individuals interested in the literature, mainly through publishing in OAJs and on institutional websites. For most of them, OA would ensure that their research literature is visible and accessible to a large audience. The respondents also indicated that they would support policies by their institutions, the Government and the donor agencies funding research in the country to improve access to agricultural scientific and technical literature. However, making grey literature documents available in institutional repositories or on personal and/or institutional websites received very little support. This is a matter for concern considering that much of the agricultural research literature in the country, and in most African countries for that matter, is available largely in form of grey literature.

Acknowledgement

We would like to acknowledge the following individuals who assisted us with the distribution of the survey questionnaires: Ms. Janevive Namangala (Librarian - ZARI), Ms. Christine Kanyengo (Librarian - School of Veterinary Medicine, UNZA), Mr. Twaambo (Assistant Librarian -School of Veterinary Medicine, UNZA), Mr. Foward Lumbwe (Documentalist -NISIR Airport), Mrs. Prudence Bwalya (Assistant Librarian - NISIR, Chilanga), and Mr. B. Chisenga (Librarian -NISIR Airport).

Cited References

- Arunachalam, Subbiah. 2009. *Scholarly communication in the age of the commons— A southern perspective*. <http://arunoa.wordpress.com/2009/06/08/pkp2-2009/>
- Beintema, N. M, E. Castelo-Magalhaes, H. Elliott, and M. Mwala. 2004. *Zambia: agricultural science and technology indicators*. ASTI Country Brief No. 18. http://www.asti.cgiar.org/pdf/Zambia_CB18.pdf
- Budapest Open Access Initiative. 2002. *Budapest Open Access Initiative*. <http://www.soros.org/openaccess/read.shtml>
- Gawrylewski, Andrea. 2008. “Publishers ask NIH to delay open access.” *The Scientist.com*, March 21, 2008. <http://www.the-scientist.com/blog/display/54442/>
- Houghton, John, and Peter Sheehan. 2006. *The Economic Impact of Enhanced Access to Research Findings*. CSSES Working Paper No. 23. <http://www.cfses.com/documents/wp23.pdf>

Lawrence, Steve. 2001. "Free online availability substantially increases a paper's impact." *Nature* 411: 521. <http://www.nature.com/nature/debates/e-access/Articles/lawrence.html>

Lewis, Joyce. 2008. "University of Southampton announces institutional Open Access mandate." <http://www.ecs.soton.ac.uk/about/news/1773>

Organic EPrints. n.d. <http://orgprints.org/about.html>

Pincock, S. 2004. "UK committee backs open access." *Genome Biology—Research News*, July 21, 2004. http://genomebiology.com/researchnews/default.asp?arx_id=gb-spotlight-20040721-01

Quantum 3. (n.d). Competitive Intelligence Glossary—the language of intelligence. <http://www.quantum3.co.za/CI%20Glossary.htm>

Suber, Peter. 2006. NIH Public-Access Policy: Frequently Asked Questions. <http://www.earlham.edu/~peters/fos/nihfaq.htm>

Suber, P. 2007. "Focusing on open access to peer-reviewed research articles and their preprints." *Open Access Overview*. <http://www.earlham.edu/~peters/fos/overview.htm>

Suber, Peter. 2009. OA mandate for the University of Pretoria. *Open Access News—News from the Open Access Movement*, May 25, 2009. <http://www.earlham.edu/~peters/fos/2009/05/oa-mandate-for-university-of-pretoria.html>

Swan, Alma, and Leslie Chan. n.d. Open Access Scholarly Information Sourcebook. <http://www.openoasis.org/>

Wellcome Trust. (n.d). *Position statement in support of open and unrestricted access to published research*. <http://www.wellcome.ac.uk/About-us/Policy/Spotlight-issues/Open-access/Policy/index.htm>

Additional Reading

Hess, Thomas, Rolf T. Wigand, Florian Mann, and Benedikt von Walter. 2007. *Open Access & Science Publishing: Results of a Study on Researchers' Acceptance and Use of Open Access Publishing*. Management report 1/2007. http://openaccess-study.com/Hess_Wigand_Mann_Walter_2007_Open_Access_Management_Report.pdf

McCook, Alison. 2004. "Open access to US govt work urged." *The Scientist*, 5(1):20040721-01.

McLellan, F. "US bill says government funded work must be open access." *The Lancet* 362 (9377): 52.

Swan, Alam. n.d. "Open Access: A Briefing Paper." *Open Access Scholarly Information Sourcebook*. <http://www.openoasis.org/images/stories/Open%20Access.pdf>

DR. JUSTIN CHISENGA is Information Management Specialist, Food and Agriculture Organization of the United Nations – Regional Office for Africa, Accra, Ghana.

DAVY SIMUMBA is Principal Agricultural Research Officer, Zambia Agricultural Research Institute, Chilanga, Zambia.

Contact Information

Dr. Justin Chisenga
Information Management Specialist
Food and Agriculture Organization – Regional Office for Africa
P.O Box GP 1628
Accra
GHANA
E-mail: justin.chisenga@fao.org
Web: www.fao.org

Open Access and Institutional Repositories in Agricultural Sciences: The Case of Botswana College of Agriculture (BCA)

Kebede Hundie Wordofa and Poloko Ntokwane-Oseafiana

EDITOR'S NOTE: This paper was presented at the 2nd Conference of the IAALD Africa Chapter, July 15–17, 2009, Accra, Ghana.

KEYWORDS: Open access, institutional repositories, scholarly literature, Internet, grey literature, agriculture, developing countries.

ABSTRACT: The Internet has made it easy to create digital collections and make them readily accessible. Academic and research institutions in developing countries generate an enormous amount of information. Most of the information exists as grey literature and is often difficult to collect, store, preserve and make accessible to users. In addition, developing countries are facing barriers in access to scholarly information due to financial constraints. One way of overcoming these problems is to promote open access (OA) and institutional repositories (IR). OA and IRs are indispensable for academic and research institutions in developing countries because access to adequate, timely and relevant information is imperative to improve research and development in the agricultural sector. This paper explores OA and IRs from practical perspectives. It describes the Botswana College of Agriculture Library's IR as a case study, including lessons learned in establishing and running the IR.

RESUMÉ: L'Internet a aidé à créer des collections numériques et à les rendre facilement accessible. Les institutions d'université et de recherche dans les pays en développement produisent une quantité énorme d'informations. La plupart de l'information existe comme littérature grise et est souvent difficile de recueillir, de stocker, de conserver et de rendre accessible aux utilisateurs. Par ailleurs, les pays en développement font face à des barrières au niveau de l'accès aux informations scientifiques en

raison des contraintes financières. Une manière pour surmonter ces problèmes est de promouvoir l'accès ouvert (AO) et les dépôts institutionnels (DI). L'AO et les DI sont indispensables pour les institutions d'université et de recherche dans les pays en développement parce que l'accès aux informations adéquates, opportunes et pertinentes est impératif pour améliorer la recherche et le développement dans le secteur agricole. Cet article explore l'AO et les DI sous des perspectives pratiques. Il décrit le DI de la bibliothèque de l'Université agricole de Botswana comme étude de cas, en incluant les leçons apprises lors de la création et la gestion du DI.

RESUMEN: La Internet ha facilitado el trabajo de crear colecciones digitales y de hacerlas fácilmente accesibles. Las instituciones académicas y de investigación de los países en desarrollo generan una cantidad enorme de información. La mayor parte de esta información existe como literatura gris y es, a menudo, difícil reunirarla, almacenarla, preservarla y hacerla accesible a los usuarios. Además, los países en desarrollo se enfrentan a obstáculos en el acceso a la información académica debidos a restricciones financieras. Una forma de superar estos problemas es la promoción de repositorios de acceso libre (AL) y de repositorios institucionales (RI). El AL y los RI son imprescindibles para las instituciones académicas y de investigación de los países en desarrollo, porque es imperativo tener acceso a información apropiada, oportuna y pertinente para mejorar la investigación y el desarrollo en el sector agropecuario. Este artículo explora la perspectiva práctica que ofrecen el AL y los RI. Describe el RI de la biblioteca de la Escuela Superior de Agricultura de Botswana como un caso de estudio, incluyendo las lecciones aprendidas en el establecimiento y en el manejo del RI.

Introduction

Agriculture is an important sector on which the majority of the rural population in developing countries depends. Stienen, Bruinsma and Neuman (2007) point out that there are major challenges and opportunities for the agricultural sector. It faces major challenges of increasing production in a situation of dwindling natural resources necessary for production, such as water shortages, declining soil fertility, climate change and rapid decrease of fertile lands due to urbanization and population growth. However, the growing demand for agricultural products offers opportunities for the sector. Unrestricted and free access to relevant, adequate and timely agricultural information plays a key role in addressing the challenges and in helping the sector to benefit from the opportunities, which will in turn improve the quality

of agricultural research outputs and help developing countries achieve food security and alleviate poverty. According to Ghosh and Das (2007), the developing world is at a critical juncture where the development of technologies, economies and humanity as a whole largely depends on access to information.

Agricultural information is generally spread across many different stakeholders, notably farmers, universities, research institutes, extension services, commercial enterprises, and non-governmental organizations. This information is often poorly documented and hard to access, and indigenous knowledge on good practices and lessons learned about innovations is generally not captured (Stienen, Bruinsma and Neuman, 2007). In this regard, open access (OA) and institutional repositories (IRs) can play important roles.

OA intends to make scholarly or scientific information

available to the public free of charge via the Internet. According to Ghosh and Das (2007), OA facilitates the availability and distribution of scholarly literature freely, as a means and effort to solve the problem of inaccessibility, primarily due to financial constraints, particularly in the developing countries.

In the case of IRs, they offer the opportunity for institutions to collect, preserve, and disseminate their research or scholarly output to their respective community as well as to the public worldwide. OA and IRs will be examined more closely below.

Open Access and Institutional Repositories

OPEN ACCESS

What is open access? – OA refers to the provision of unrestricted access to scholarly or scientific information to the general public free of charge on the Internet. The OA movement advocates the principle of making scholarly literature available to the public at no cost by removing price barriers such as subscriptions, licensing fees, pay-per-view fees, and most copyright and licensing restrictions (Suber, 2007). OA has gained worldwide support as an alternative and sustainable model of scholarly communication and accessing scientific information (Ghosh and Das, 2007). It is limited to scholarly or scientific literature that is produced without expectation of payment (Parker, 2006). The Budapest Open Access Initiative (2002) defines OA as follows:

By “open access” to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

In other words, OA removes the financial, technical and legal barriers that are designed to limit access to scientific literature to subscribing customers; and it makes the literature accessible online free of charge. OA also facilitates wider distribution and use of the literature. The Association of Research Libraries (2004) defines OA as “a cost effective way to disseminate and use information. It is an alternative to the traditional subscription-based publishing model made possible by new digital technologies and networked communication.”

Why open access? – By promoting free online access to scientific literature, the OA movement intends to overcome two major obstacles that mainly academic and research institutions face today (Suber, 2003). The first obstacle is the rising price of subscriptions to journals and electronic databases. According to Van Orsdel and

Born (2008), journal prices have increased by 9–10% in 2008 alone. Suber (2003) calls this increasing cost of journals subscriptions the “price crisis”. The second obstacle is that libraries are constrained by licensing terms and software locks that prevent them from using e-journals in the same full and free way that they may use print journals—referred to as the “permission crisis” (Suber, 2003). These two crises are not only affecting libraries and researchers but are also severely impeding research and all of its benefits.

These crises are causing more institutions to consider OA as an alternative. The situation has been the worst in developing countries where institutions cannot afford to subscribe to a wide array of journals due to a lack of resources and limited budgetary provisions; for these institutions, OA has come as a blessing. As developing countries, we should therefore make every effort to contribute to the success of OA and make good use of literature that is already available OA. We should also sensitize researchers and scholars about OA.

Other driving forces behind the OA movement include the low cost of publishing on the Internet, ease of accessing electronic information, and the Internet culture of accessing information for free. Jayashree and Keatinge (2008) point out that OA intends to address some of the limitations of the traditional journal publishing that, in the context of today’s research, hinder progress. Traditional print journals are difficult to distribute, archive and duplicate, requiring redistribution points in the form of libraries. They also tend to take longer to publish due to the printing process.

The benefits of OA, which are summarized in the Open Access Scholarly Information Sourcebook (OASIS), are that it:

- provides access to the world’s research output, free of financial and other restrictions, thereby levelling the playing field;
- incorporates local research into an interoperable network of global knowledge;
- increases impact of local research, providing new contacts and research partnerships for authors;
- removes professional isolation; and
- strengthens economies by developing a strong and independent national science base (Swan and Chan, 2009).

What are the benefits of open access? – OA benefits authors, researchers, lecturers, students, libraries, universities, publishers, funding agencies, governments, and citizens. According to Suber (2007), OA:

- gives authors a larger audience than that of subscription-based journals, and increases the visibility and impact of their work;
- gives researchers barrier free access to scientific literature they need for their research, not constrained by the budgets of their libraries;

- gives lecturers and students key resources and eliminates the need for permissions to reproduce and distribute contents;
- helps libraries overcome the price and permission crises for scholarly journals. It also helps libraries assist users in finding the information they need, regardless of the budget-enforced limits on the libraries' collections;
- increases the visibility of universities' faculty and institution, reduces their expenses for journals, and advances their mission to share knowledge;
- makes journals and articles more visible, discoverable, retrievable, and useful. If a journal is OA, then it can use this superior visibility to attract submissions and advertising;
- increases the return on funding agencies' investment in research, making the results of the funded research more widely available, more discoverable, more retrievable, and more useful;
- serves public funding agencies in a second way as well, by providing public access to the results of publicly-funded research;
- promotes democracy by sharing government information as widely as possible; and
- gives citizens access to research output for which they pay through taxes; and helps them indirectly by helping the researchers, physicians, manufacturers, technologists, and others who make use of cutting-edge research for their benefits.

How to implement open access? – The advent of the Internet has generally changed the way information is collected, processed, and disseminated, paving the way for OA. There are two primary ways of implementing OA: OA journals and institutional repositories. Both are proven mechanisms for closing information gaps in ways that are appropriate for low income countries. According to Parker (2006), the main difference is that the former conduct peer review and the latter do not. IRs simply make their content freely available where as OA journals perform peer review before making their content freely available to the public.

There are physical and legal prerequisites for OA. The physical prerequisite is that the work be digital and on the Internet; the legal prerequisite is that the work should be free from copyright and licensing restrictions. For works not in the public domain, OA requires copyright consent from the copyright holders. This consent allows unrestricted reading, downloading, copying, sharing, storing, printing, searching, linking, and crawling of the full-text of the work (Suber, 2004).

There are three factors that make OA attainable. First, authors do not demand payment for their work. They willingly publish in OA journals that pay no royalties. Second, the Internet allows distribution of perfect copies at virtually no cost to a worldwide audience. Third, when the author retains copyright and consents

to OA, then there are no legal barriers to OA (Suber, 2003).

However, according to Swan (2008), researchers complain about restricted access to information, yet their own dissemination behaviour does not match up to their access expectations. She reports that the following reasons for why researchers do not make their work OA:

- They are either unaware of the concept, or are aware but uninformed or unsure of how to provide their work OA.
- They may be ill informed and/or fear copyright and prior publication issues.
- Some have a poor appreciation of what IRs are trying to achieve, thinking that placing their work on their websites is an adequate substitute for depositing it in a repository.

Jayashree and Keatinge (2008) suggest that opting for OA involves effort at two levels — at the operational and policy levels. At the operational level, it involves adopting tools, software and processes that help make information OA. At the policy level, academic or research institutions have to put in place the processes and procedures to fulfil their OA mandate, giving researchers some incentive to provide their research outputs OA and meeting funding agency OA requirements. OA advocates emphasize that the key focus should be not on rhetoric but rather on the practical issues necessary to make OA a reality on a wider scale.

OA journals are now well established in developing countries, and there have been several initiatives to implement OA literature. Examples of the best-known services, now distributing over 600 journals among them, are: *Bioline International* (<http://www.bioline.org.br>), *Medknow Publications* (<http://www.medknow.com>), and *SciELO* (<http://www.scielo.org>) (Swan and Chan, 2009). Moreover, the *Directory of Open Access Journals* (DOAJ), which is hosted, maintained and partly funded by Lund University Libraries in Sweden, is a huge collection full-text OA journals covering all subjects. The aims of the Directory (<http://www.doaj.org>) are to “increase the visibility and ease of use of OA scientific and scholarly journals thereby promoting their increased usage and impact” and to “be comprehensive and cover all OA scientific and scholarly journals that use a quality control system to guarantee the content.” As of February 2009, there were 3875 journals in the database, of which 216 are in the fields of agriculture and food sciences.

Yet another useful tool for finding OA literature is *OAster* (<http://www.oclc.org/oaister/>), which is a union catalogue of digital resources currently providing access to over 20 million records from 1082 contributors as of March 2009. It can be searched by title, author, subject, etc. and searches can be limited by text, image, audio, video, etc.

In addition, *Google Scholar* (<http://scholar.google.com/>)

indexes the full-text (including the cited references) of articles in subscription-based scholarly journals on the Internet as well as OA literature.

INSTITUTIONAL REPOSITORIES

Definition – Crow (2002) defines IRs as “digital collections capturing and preserving the intellectual output of a single or multi-university community.” Crow further explains that it is “a digital archive of the intellectual product created by the faculty, research staff, and students of an institution and accessible to end users both within and outside of the institution, with few if any barriers to access.”

IRs are collections of research output or information generated particularly by academic or research institutions and stored in a digital format that can be preserved and made accessible to end users via the Internet. The goals of IRs are to collect and preserve an institution’s intellectual output, including grey literature; to provide OA to information in the IR; and to increase the visibility of the institution that owns the repository.

Contents of institutional repositories – Many academic and research institutions around the world have embarked on digitizing their scholarly and research outputs and creating an IR to hold them. Different types of contents are used in the creation of an IR, including published materials such as post-print, peer-reviewed articles, book chapters, monographs, and conference proceedings, as well as unpublished or grey literature such as pre-prints, working papers, theses and dissertations, course materials, technical reports, works-in-progress, annual reports, committee reports, past examinations, student projects, photos, audio and video recordings, and so forth. In fact, the contents of an IR can be virtually any digital information that an institution wishes to capture, preserve and openly disseminate to end users (Crow, 2002).

Benefits of institutional repositories – There are many benefits for institutions that establish IRs. IRs allow for the storage and easy retrieval of institutional information. They offer the opportunity to organize and maintain all of the institution’s scholarly information in one location that is accessible to everyone in the institution as well as to the global community. In other words, they enable free sharing of information, encouraging collaboration and widespread communication of institutional education and research activities.

IRs offer an opportunity to increase visibility to institutions and faculty members by increasing the visibility of their work through OA. With an IR, users throughout the world have access to any institutional information that can be found on the Internet using various search engines. This creates a community of scholars who would otherwise never communicate with one another. Information is available to any interested individual free of charge, thus promoting the principle of OA to information. In addition, an IR permanently and securely preserves the scholarly information of an institution.

There are many significant benefits for faculty who self-archive their scholarly works, including the rapid sharing of unpublished resources and ideas, long term preservation of research papers, and the promotion of collaboration. OA literature that is accessible through an IR attracts more visibility, which is in turn likely to increase citation rates. The publishing of research in an IR may also attract future research funding.

Yeates (2003) summarizes the general benefits of IRs as follows:

- Expansion of the range of information that can be shared
- Opportunities to simplify and extend information dissemination
- Leverage existing investment in information and content management systems
- Highlight the quality of intellectual capital
- Opportunities for new forms of scholarly communication
- Flexible ways to develop existing scholarly communications

In addition, the benefits of IRs to research institutions in developing countries are numerous. According to Chan, Kirsop and Arunachalam (2005), these benefits are as follows:

- Access to international research output
- International access to research generated in developing countries
- Promotion of institutional research output, providing new contacts and research partnerships for authors
- Improved citation and research impact
- Provision of usage statistics showing global interest of institutional research
- OA archives allow improved access to subsidiary data
- Peer review facilitation

Challenges facing institutional repositories – There are challenges to setting up and managing an IR. One of the challenges is a lack of faculty involvement. A lack of faculty interest in contributing their works to the IR will stymie its growth. Overcoming this challenge requires a lot of advocacy and education by building strong relationships between library and faculty. It is crucial that resources go into promoting the benefits of IRs to faculty. This approach may be useful to institutions that are embarking on the creation of an IR, or that are experiencing low faculty involvement in their IR (Jackman, 2007).

Chan and Kirsop (2001) point out that a major obstacle for scientists in developing countries is the lack of awareness of the availability different mechanisms for distributing and accessing research information, mainly due to the lack of: (1) telecommunications infrastructure in developing countries; and (2) concerted effort from institutions to inform and promote the use of Internet

technology. To ensure that the needs of academic and research communities in the developing world are not left out, further awareness, consultation and partnership building are required.

Dealing with copyright issues is another challenging task for libraries. Getting copyright clearance is a challenge because of its implications for the content submitters and for the libraries themselves. Copyright clearance might take a long time as well. Some publishers allow self-archiving of journal articles to some degree, while other publishers' policies vary with regard to pre-prints and post-prints. Therefore, libraries should seek permission when a publisher's policy is unclear.

Another challenge is content harvesting and digitization of print materials. Libraries have to scan print submissions, which represent the majority of submitted materials. Where and if possible, libraries should request an electronic copy of documents to save time. In addition, creating metadata information is a time consuming exercise.

Development of an IR policy is a key aspect of any IR start-up process. It includes the creation of policies for the submission and approval procedure, preservation, author permission and licensing terms and rights management. Lack of an IR policy could contribute to low levels of staff interest and submissions. Getting faculty to agree to share their works can sometimes create an obstacle for librarians endeavouring to create an IR.

In order to overcome some of these challenges, existing state or regional consortia should be used to provide a logical infrastructure for implementing IRs via collective development. Such cooperation could yield economies of scale and help institutions avoid the needless replication of technical systems. Indeed, consortia might well prove the fastest path to proliferating IRs and attaining a critical mass of OA content (Crow, 2002).

Choosing IR software solutions - There are three main IR software solutions for establishing IRs: open source software (OSS); commercial or proprietary software; and a vendor hosted system (Parker, 2006). OSS is free to use but no support or training is provided to institutions. On the other hand, proprietary IR systems are not free; institutions have to pay for a software license, and support and maintenance. However, support and training is provided by the software developers. Berkeley Electronic Press' Digital Commons (<http://www.bepress.com/ir/>) is the leading hosted repository platform.

Choosing the best software solution can be a difficult task. Sutherland and Hopkins (2006) highlight various factors that should be considered when choosing IR solutions. These factors include costs, staffing, support and training, development of the system, and hardware requirements. Institutions should look at the pros and cons of each option as well as the resources (financial and technical staff) available to them.

While OSS solutions superficially appear to be a simple and cost effective alternative, the reality is that they require considerable time, expertise and effort (Suther-

land and Hopkins, 2006). Courant and Griffiths (2006) point out that "adoption of OSS may well be hindered by uncertainty about future support for and improvements in the software. Furthermore, without coordination, there is likely to be wasteful duplication both of development efforts and of governance structures and suboptimal attention will be paid to issues of interoperability."

OSS requires greater technical staff to install, maintain and customize software. For OSS solutions, systems administration and programming skills are required for simple tasks such as modifying templates and user interfaces and for more complex tasks where integration with other systems is the goal. According to Parker (2006), the manpower and expertise needed to work with OSS may be a limitation for smaller institutions, unlike a commercial system that requires less technical staff.

OSS heavily relies on the community of users for support; libraries may have to be entirely self reliant. But in the case of commercial software, support is provided under a contract or agreement and training is often available. Development of OSS is usually undirected and libraries may have divergent needs leading to development in different directions. This is especially true in less mature applications. The risk is that extensive customization will prevent future upgrades of the software. The development of commercial software is directed, often in line with input from customers; and enhancements are part of the software development path and will be compatible with upgrades (Sutherland and Hopkins, 2006).

There is no hardware to purchase, install and maintain for a hosted solution. A hosted solution is not as staff intensive in terms of set up, customization, configuration and ongoing administration and maintenance; and uploading of contents could start immediately after installation. Moreover, backups and redundancy are the vendor's responsibility (Sutherland and Hopkins, 2006). Its drawback, however, is that the institution does not have control over it.

In order to make the institutional output in an IR harvestable by search engines, IRs must expose their data through the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). OAI-PMH is a mechanism that facilitates repository interoperability and accessibility to provide access through various search engines and discovery tools. Therefore, one has to take this into consideration when choosing IR software. The IR solution should also support multi-media.

Implications of OA and IRs for Developing Countries

Chan, Kirsop and Arunachalam (2005) point out that the problems that developing countries have always faced with respect to research information are two-fold: (1) the inability to afford subscriptions to journals, as the cost of journals has increased exponentially over time;

and (2) the inability to integrate national research into the global knowledge base because the publication and distribution channels in developed countries for research publications from developing countries are very limited.

It is therefore clear that researchers in developing countries have a huge amount to gain from the greatly expanded access to global scientific literature that OA can offer. OA and IRs make changes in the accessibility of both published and unpublished literature possible in developing countries. According to Nkosi (2008), IRs present an opportunity for academic institutions to increase the visibility of their researchers, potentially making them more attractive to international journal publishers. However, a coordinated effort among African academic institutions to invest in IRs would be required to achieve this level of exposure for all African researchers.

To date, there has been very little achieved with regard to IRs in developing countries. As of February 2009, there were only 20 IRs from Africa indexed in the *Directory of Open Access Repositories* (OpenDOAR), out of which 14 are from South Africa (see Figure 1). And there was only one IR that is related to agriculture. OpenDOAR (http://www.open_doar.org/) is an “authoritative directory of academic open access repositories.”

The *Registry of Open Access Repositories* (ROAR) is another directory of IRs. It contains more or less the same number of IRs from developing countries as OpenDOAR. ROAR (<http://roar.eprints.org/>) is a directory of self-archiving Eprint IRs. The registry has two functions: (1) to monitor overall growth in the number of Eprint archives; and (2) to maintain a list of Eprints sites. Users can browse archives by country, archive type, or software, or search for them by keyword.

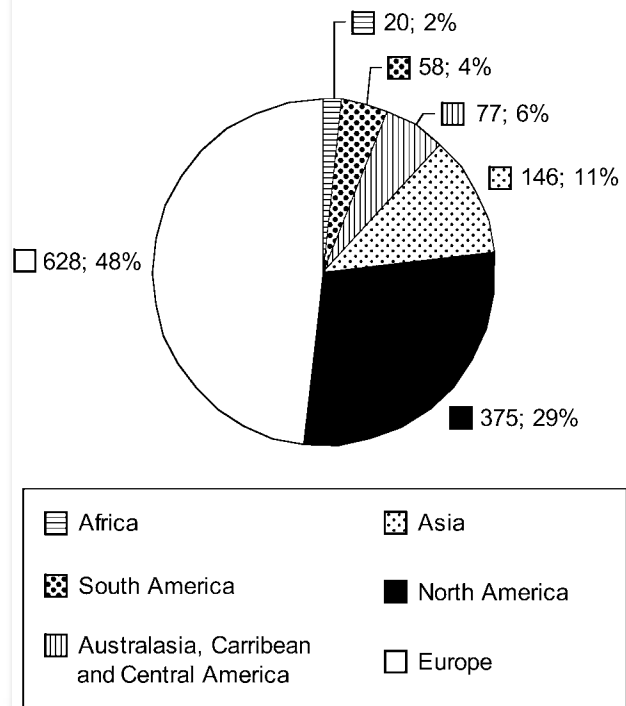
IR of Botswana College of Agriculture (BCA)

Background information about the College – The Botswana College of Agriculture (BCA) was established on 31st May 1991. The College is a parastatal under the Ministry of Agriculture and an associate institution of the University of Botswana. It offers programs at undergraduate and postgraduate levels in five academic departments, namely; Animal Science and Production, Basic Sciences, Crop Science and Production, Agricultural Economics, Educations and Extension, and Agricultural Engineering and Land Planning.

As posted on the college website (<http://www.bca.bw/>), its vision is to become “a world-class institution in teaching, research and service in agriculture and related fields.” The College’s mission is “to produce high quality graduates, generate suitable technologies and provide advisory services to improve agriculture productivity through innovative teaching, relevant research, and customer-driven service.”

Institutional repository of BCA – BCA generates a lot of agricultural information. The information generated by the College includes staff research reports, journal

FIGURE 1 – Numbers and percentages of IRs by continents

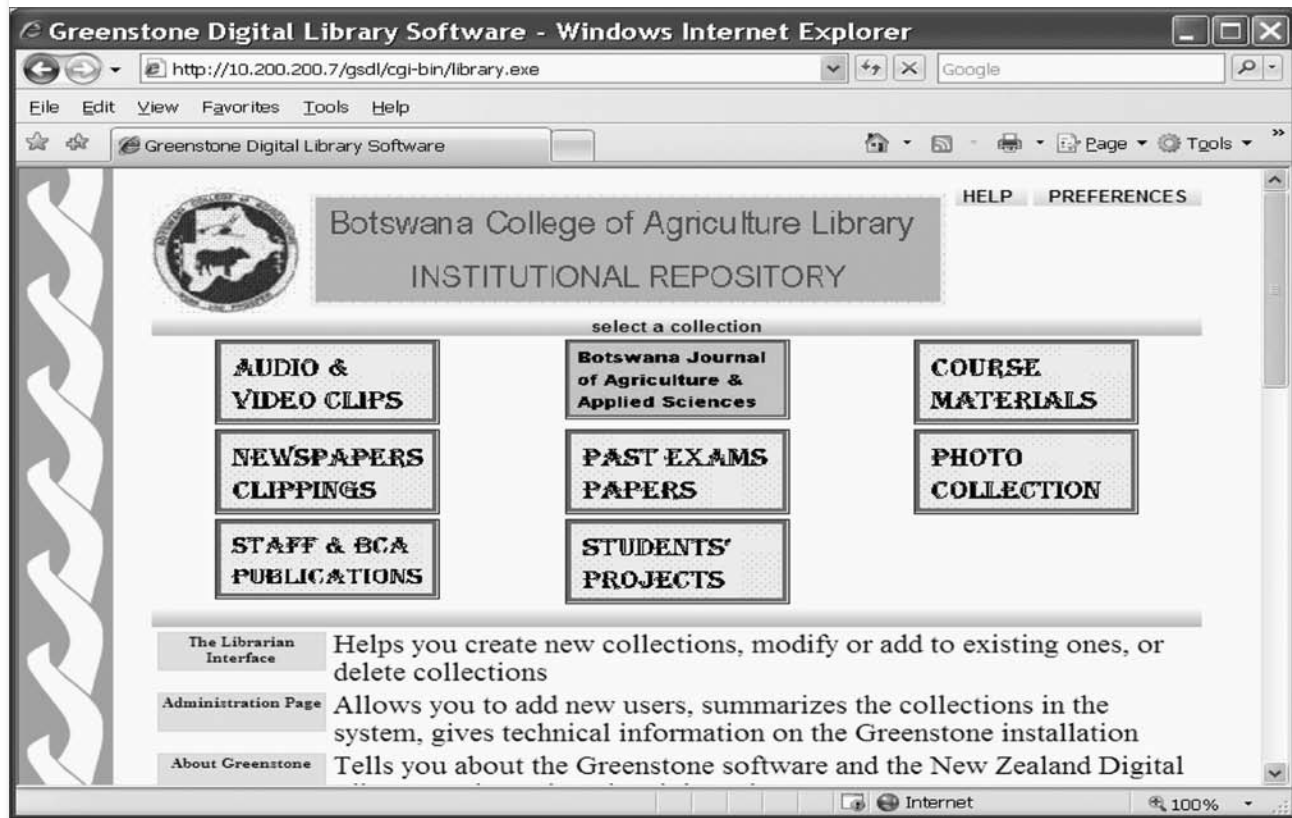


articles, staff dissertations/theses, students projects, student handbooks, course materials, lecture notes, newsletters, past examination papers, and so forth. However, this information was not readily available to the college community and the public when needed. The college library embarked on the task of establishing an IR in 2007 with a view towards making the above information accessible to staff and students on an Intranet and to the public on the Internet. There were two main objectives for establishing the IR. The first was to provide access to the college scholarly output, most of which was grey literature and thus not easily accessible. The second was to preserve the scholarly work in a digitized format.

We envisaged many benefits of the IR. It would provide a central archive of information generated by the College; it would increase the dissemination and impact of the information promoting the college programs and courses worldwide. We expected that it would enhance research and teaching by providing access to the college’s scholarly work; and it would ensure long-term preservation of the scholarly work for future reference.

We started off by writing a project proposal, which was approved by both the library and college management committees. As a result, we got all the necessary support from the management. Once the proposal was approved and funds were made available, we developed a pilot IR. We acquired a simple server and a scanner, and used existing network infrastructure. The library decided to use an open source software (OSS) known as Greenstone Digital Library (or just Greenstone) that runs on Windows because we wanted to minimize cost. In addition,

FIGURE 2 – The screenshot of the BCA IR homepage



the library has adequate technical staff to implement the OSS. The software was produced by the New Zealand Digital Library Project at the University of Waikato. Apache, which is also OSS, was used as a web server.

We developed the pilot IR for two purposes: (1) we used it to test the IR software to see if it was suitable for our IR project and to train library staff on the software; and (2) we used it to do demonstrations to faculty and staff. It was first demonstrated to members of the Management Consultative Committee (MCC) and then to the Faculty Board. The pilot IR helped us to gain very good support from the management and staff.

Having achieved these two objectives, we moved to the next phase, which was to digitize and add more collections into the IR (see Figure 2). We created several collections such as pre-print and post-print journal articles of staff, student projects, past examinations, the *Botswana Journal of Agriculture and Applied Sciences* published by the College, course/teaching materials, audio and video collections of official events, local newspaper articles related to agriculture (newspaper clippings), college newsletters and other college publications. For example, the IR contains all volumes of the *Botswana Journal of Agriculture and Applied Sciences* and a number of journal articles (see Figure 3).

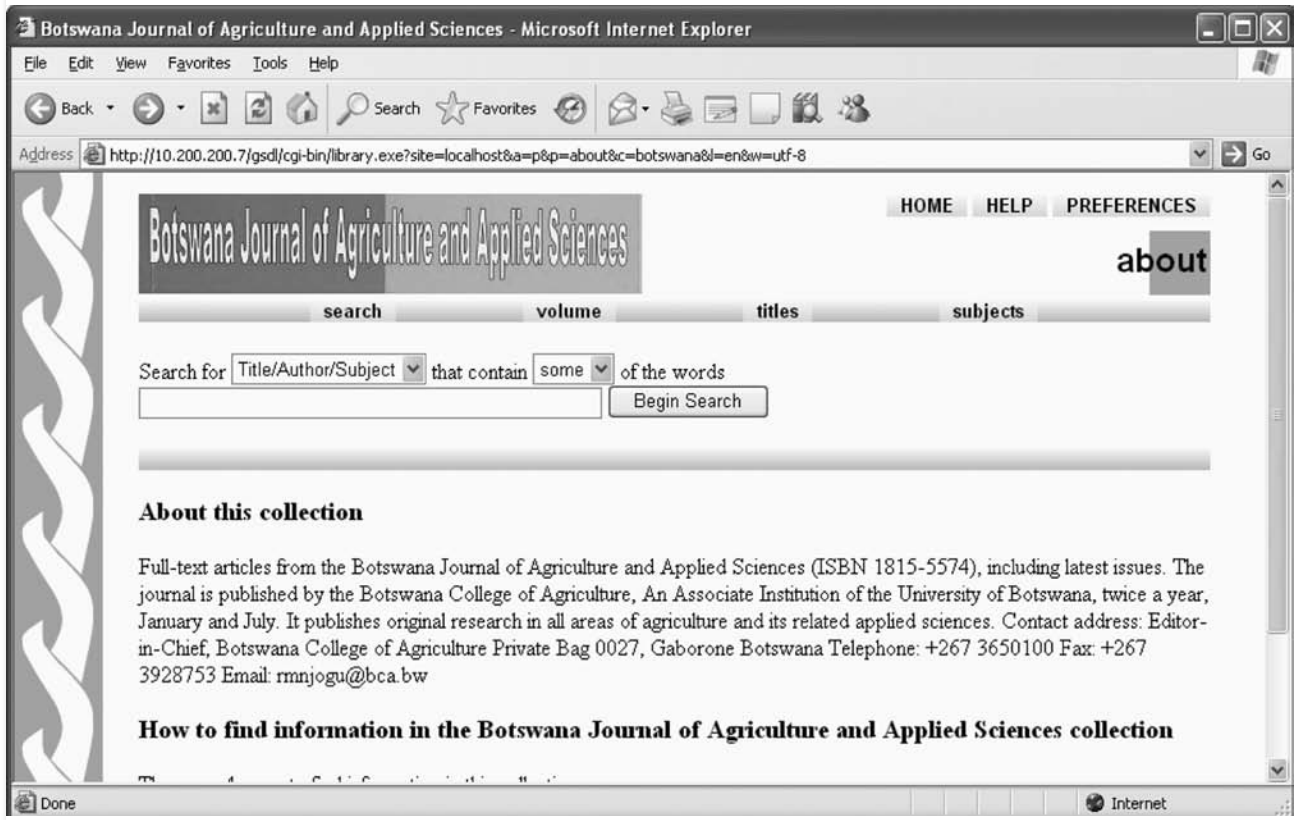
The main challenge encountered was the digitization of the above materials, as almost all of them were in print format. Hence, much of the material had to be

scanned before it could be deposited in the IR. Creation of metadata was a time consuming exercise. Currently, the library is still digitizing more print materials to enrich the IR contents. This is an on-going process. Having created the above collections and tested the IR system, we officially launched the IR in October 2008. The event was a success and it helped us to sensitize the college community to the existence of the IR and get more support from management and staff. Currently we are in the process of developing an IR policy. At the moment, the IR is only accessible to the college community through the Intranet and is not accessible on the Internet, as the IR policy is not yet completed.

Lessons learned – IRs are quite appealing to academic and research libraries because of some of the benefits discussed above. However, it is essential for these libraries to realise that creating, running, and sustaining IRs can be a challenging task, and that there must be appropriate support from management, faculty, IT staff, and librarians in their institutions. Also, outside support is sometimes needed to maintain the functionality of an IR.

The pilot IR did work very well for us and resulted in enough support from all staff and management. In this regard, we have learned that it is easier to convince management and faculty about the importance and benefits of IRs and to get more support by demonstrating the pilot IR to them instead of trying to convince them through discussions and presentations — “seeing is believing”.

FIGURE 3 – The screenshot of the college journal in the BCA IR



We have also learned that content harvesting, digitization of print materials, and the creation of metadata took a lot of IR staff time, more than we had initially anticipated. In addition to start-up costs, staff time should be budgeted for before embarking on the task of establishing an IR as this affects other library services. Staff training on the OSS and OAI-PMH metadata was an oversight, but it is a considerable task that requires good planning.

We have realized after implementation of the IR that some information we had initially thought was not needed by users has actually been in high demand, e.g., students projects, information on college policies, to mention just a few.

Conclusion

Agriculture is an important sector upon which the majority of the population in developing countries depends. The sector has its own challenges that need to be overcome through research and development (R&D), which requires adequate, relevant, and timely information.

Unfortunately, researchers and academicians in developing countries are impacted by financial constraints to access scholarly literature due to the escalating costs of journals and proprietary databases. In addition, much of the agricultural research output and indigenous knowledge in developing countries is neither well documented

nor easily accessible. As a result, they lack the visibility needed to reach a wider audience and hence have a limited global impact.

Concerned institutions and governments need to do more to insure that their scientists have easy access to information and that their research outputs are accessible to the public through OA and IRs.

Through OA and IRs, institutions will be able to collect, store and disseminate their research, while bringing visibility to the institutions as well as individual researchers or scholars. In this way, OA and IRs can improve agricultural research in developing countries and thus benefit the sector significantly. In addition, they can indirectly help developing countries to achieve food security and alleviate poverty. Therefore, the time has come to embrace OA and IRs as a means of overcoming the problem of access to agricultural information.

However, it is important to keep in mind that OA and IRs are still evolving and that there are many challenges affecting those who are trying to make OA and IRs a reality on a wider scale. To make them a reality, much is required from researchers and scholars as well as academic and research institutions in order to make their scholarly literature accessible to end users based on the principle of OA, i.e. allowing unrestricted reading, downloading, copying, sharing, storing, printing, searching, linking, and crawling of the full-text of the work through the Internet.

References

- Association of Research Libraries. 2004. *Framing the issue: open access*. http://www.arl.org/bm~doc/framing_issue_may04.pdf
- Budapest Open Access Initiative. 2002. <http://www.soros.org/openaccess/read.shtml>
- Chan, L., and B. Kirsop. 2001. "Open archiving opportunities for developing countries: towards equitable distribution of global knowledge." *Ariadne* Issue 30. <http://www.ariadne.ac.uk/issue30/oai-chan/>
- Chan, L., B. Kirsop, and S. Arunachalam. 2005. "Open access archiving: the fast track to building research capacity in developing countries." *SciDev.Net: Features*. <http://www.scidev.net/en/features/open-access-archiving-the-fast-track-to-building-r.html>
- Courant, P. N., and R. J. Griffiths. 2006. *Software and collaboration in higher education: A study of open source software*. http://www.ithaka.org/ithaka-s-r/strategy/oss/OOSS_Report_FINAL.pdf
- Crow, Raym. 2002. *The case for institutional repositories: A SPARC position paper*. http://www.arl.org/sparc/bm~doc/ir_final_release_102.pdf
- Ghosh, S.B., and Anup Kumar Das. 2007. "Open access and institutional repositories—a developing country perspective: a case study of India." *IFLA Journal* 33(3). http://archive.ifla.org/IV/ifla72/papers/157-Ghosh_Das-en.pdf
- Jackman, S. Yearwood. 2007. "Creating an institutional repository at the University of Liverpool: our approach." *SCONUL Focus* 42: 35–37. <http://www.sconul.ac.uk/publications/newsletter/42/12.pdf>
- Jayashree, B., and J. D. H. Keatinge. 2008. "The potential of institutional repositories in fulfilling current research communication needs." *Journal of SAT Agricultural Research* 6. http://ejournal.icrisat.org/Volume6/Editorial_Article/Jayashree%20Balaji2.pdf
- Nkosi, Dudu Sizakele. 2008. "Establishing an institutional repository: A UNISA case study." Paper presented at the Conference on Electronic Publishing and Dissemination: Putting African journals online: opportunities, implications and limits, October 6–7, 2008, Dakar, Senegal. http://www.codesria.org/Links/conferences/el_public8_eng/nkosi.pdf
- Parker, Carol A. 2006. "Institutional repositories and the principle of open access: changing the way we think about legal scholarship." *bepress Legal Series*. Working Paper 1705. <http://law.bepress.com/expresso/eps/1705>
- Stienen, Jac, Wietse Bruinsma, and Frans Neuman. 2007. "How ICT can make a difference in agricultural livelihoods." In *The Commonwealth Ministers Reference Book 2007*. <http://www.iicd.org/files/ICT%20and%20agricultural%20livelihoods.pdf>
- Suber, Peter. 2003. *Removing the barriers to research: An introduction to open access for librarians*. <http://www.earlham.edu/~peters/writing/acrl.htm>
- Suber, Peter. 2004. "Creating an intellectual commons through open access." Paper presented at the Workshop on Scholarly Communication as a Commons, March 31–April 2, 2004, Bloomington, Indiana, USA. <http://dlc.dlib.indiana.edu/dlc/handle/10535/300>
- Suber, Peter. 2007. *Open Access Overview: focusing on open access to peer-reviewed research articles and their preprints*. <http://www.earlham.edu/~peters/fos/overview.htm>
- Sutherland, Mark, and Peta Hopkins. 2006. *Open source or off-the-Shelf? Establishing an institutional repository for a small institution*. Information Services papers. http://epublications.bond.edu.au/cgi/viewcontent.cgi?article=1010&context=library_pubs
- Swan, A. 2008. *Key concerns within the scholarly communication process—report to the JISC Scholarly Communications Group*. <http://www.jisc.ac.uk/media/documents/aboutus/workinggroups/topconcernsreport.doc>
- Swan, A., and L. Chan, eds. 2009. *Open Access Scholarly Information Sourcebook (OASIS): OA and developing countries*. http://www.openoasis.org/index.php?option=com_content&view=article&catid=78:articles&id=28:developing-countries&Itemid=253
- Van Orsdel, L. C., and K. Born. 2008. "Periodicals Price Survey 2008: Embracing Openness—Global initiatives and startling successes hint at the profound implications of open access on journal publishing." *Library Journal* (April 15): 53–58.
- Yeates, Robin. 2003. "Institutional repositories." *Journal of Information and Knowledge Management Systems* 33(2): 96–101.

KEBEDE HUNDIE WORDOFA is IT Librarian and POLOKO NTOKWANE-OSEAFIANA is Special Collections Librarian at the Botswana College of Agriculture, Gaborone, Botswana.

Contact Information

Kebede Hundie Wordofa
IT Librarian
Botswana College of Agriculture
Private Bag 0027, Gaborone
BOTSWANA
PH: (+267) 3650 118
Fax: (+267) 3928 753
E-mail: khundie@bca.bw or kebedeh@hotmail.com
Web: www.bca.bw

Poloko Ntswana-Oseafiana
Special Collections Librarian
Botswana College of Agriculture
Private Bag 0027, Gaborone
BOTSWANA
PH: (+267) 3650 112
Fax: (+267) 3928 753
E-mail: pntokwan@bca.bw or pntokwan@yahoo.com
Web: www.bca.bw

Fostering Open Access Publishing in Tanzanian Public Universities: Policy Makers' Perspectives

Frankwell W. Dulle and M. K. Minishi-Majanja

EDITOR'S NOTE: This paper was presented at the 2nd Conference of the IAALD Africa Chapter, July 15–17, 2009, Accra, Ghana.

KEYWORDS: institutional repositories, open access, public universities, Tanzania.

ABSTRACT: This paper stems from an ongoing doctoral study entitled "An analysis of open access scholarly communication in Tanzanian public universities". The focus of the paper is on one of the five objectives of the main study, i.e. to investigate the general awareness and usage of open access (OA) in public universities. To determine their awareness and perspectives, 63 policy makers from 6 universities were interviewed. The findings revealed that most (90.5%) of the university policy makers are aware of OA in general but not specific terms. However, it was generally acknowledged that access to and dissemination of scholarly content at their respective universities is problematic and hence interventions/initiatives likely to stimulate adoption of OA, though absent, would be supported. The study recommends that librarians and information professionals should capitalize on the positive perspectives of policy makers by establishing institutional repositories for wider dissemination of research findings in the country.

RESUMÉ: Cet article a pour origine une étude doctorale continue appelée « Une analyse de la communication académique en accès ouvert dans les universités publiques tanzaniennes ». L'article se focalise sur un des cinq objectifs de l'étude principale, c.-à-d. examiner l'état de connaissance et l'usage générale de l'accès ouvert (AO) dans les universités publiques. Pour déterminer leur connaissance et leur perspective, 63 décideurs politiques de 6 universités ont été interviewés. Les conclusions ont révélé que la plupart (90.5%) des décideurs politiques des universités sont

conscients de l'AO en général mais pas en termes spécifiques. Cependant, il a été généralement reconnu que l'accès à et la diffusion de contenu académique dans leurs universités respectives sont problématiques, et que des interventions/initiatives qui stimuleraient l'adoption d'AO, bien qu'absentes, auraient leur soutien. L'étude recommande que des spécialistes de l'information et des bibliothécaires capitalisent sur les perspectives positives des décideurs politiques en établissant des dépôts institutionnels pour une diffusion plus large des résultats de recherche dans le pays.

RESUMEN: Este artículo se basa en un estudio para doctorado en curso que se titula "Análisis de la comunicación académica de acceso libre en las universidades públicas de Tanzania". El artículo se enfoca en uno de los cinco objetivos del estudio principal, es decir, en investigar el nivel de información sobre acceso libre (AL) que tienen, en general, las universidades públicas y el uso que dan a ese enfoque. Fueron entrevistados 63 formuladores de políticas de seis universidades para determinar su nivel de información y las perspectivas que tenían. Los resultados revelaron que la mayoría (90.5%) de los formuladores de políticas universitarias eran conocedores del AL en términos generales, aunque no en términos específicos. Ahora bien, se reconoció que tanto el acceso al contenido académico como la difusión de éste en las respectivas universidades eran, en general, problemáticos; se puede deducir de aquí que las intervenciones o iniciativas que estimularían la adopción del AL, aunque brillen por su ausencia, serían apoyadas. El estudio recomienda que los bibliotecarios y los profesionales de la información deberían aprovechar las indicaciones positivas de los formuladores de políticas estableciendo repositorios institucionales para lograr una mayor difusión de los resultados de la investigación en el país.

Introduction

The term 'scholarly communication' encompasses the various processes through which scholars exchange information. Such exchange is considered important for the advancement of knowledge in both developed and developing countries. The importance of scholarly communication is evidenced by the fact that most research funding agencies demand evidence of dissemination of research findings from their grants' awardees as a means to account for the funds spent in undertaking the research.

Similarly, employers such as universities and governments use the scholarly output of their academics as the main criteria in considering promotion of such staff (Xia, 2006). Rating and ranking of universities is also often linked to the level of scholarly output. For instance, the "Web Metrics Ranking of World Universities", an initia-

tive of the Cybermetrics Lab, ranks universities by focusing on the visibility and impact of published material on the web (<http://www.webometrics.info>). Research outputs such as e-journals, repositories, research results as well as other indicators (academic materials, external links, informal scholarly communication, etc) are included in the criteria for ranking purposes. In South Africa, the funding policy for universities favours institutions that have high levels of scholarly publications, such as journal articles and books. In many other cases, the usefulness or importance of a discipline is often measured in terms of its research productivity and impact. Despite this importance, it is generally acknowledged that scholars from developing countries experience more problems in accessing and disseminating scholarly content than their counterparts from the developed world (Moller, 2006; Yiotis, 2005; Kirsop, 2008).

The serials crisis, resulting from the growing volume of literature and escalating journal prices, has made it difficult for developing countries to subscribe to the journals of their researchers need. For example, according to a survey conducted by the World Health Organization (WHO), “of the 75 countries with a GNP per capita per year of less than US\$1,000, 56 percent of institutions have had no subscriptions to journals over the last five years; of countries with a GNP between US\$1–3,000, 34 per cent have had no subscriptions and a further 34 per cent have an average of two subscriptions per year” (Aronson, 2004).

A similar scenario is evident with respect to dissemination of research outputs from developing countries. New knowledge is largely created in richer countries. Chisenga (1999) for example, cites a survey of the United Nations Economic Commission for Africa showing that Africa generates only 0.4 per cent of global content. Nwagwu and Ahmed (2009) also indicate that Africa South of Sahara contributed only 0.7% of the global literature in 2001 as compared to India (1.9%) and China (2%) during same period, further supporting the aforementioned survey.

According to the Academy of Science of South Africa (2006), South Africa, which is the African giant in research output, is a mere dwarf internationally considering that it accounted for only 0.5% of the papers and 0.2% of the journal articles in the combined research databases of the Institute for Scientific Information (ISI) system. In the Library and Information Science (LIS) discipline, Onyancha (2007) found that Africa accounted for only 0.12% of the world research output between 1986 and 2006 (cumulatively) as indexed in ISI's *Science Citation Index*, *Social Sciences Citation Index*, and *Library, Information Science & Technology Abstracts* databases. This is dismal considering that LIS was ranked by Onyancha as the 4th most productive (research publications) discipline in Africa, behind Economics, Anthropology, and Education. Based on studies done in Eastern, Central and Southern Africa regions including Tanzania, it appears that this can be attributed in part to the tendency of researchers to publish in grey literature, which contributes to the low visibility of research output from this part of the world (Matovelo and Chailla, 1999; Mook, Munyua and Nampala, 2005).

Inadequate access to current local and international research output coupled with limited contributions of research findings from the developing world to the global content represents a significant barrier to eliminating the development disparities that exist between developed and developing countries. The fact that the global economy is driven by information as an asset led Nwagwu and Ahmed (2009) to conclude that “... the global economy will be skewed in favour of information-haves, leaving behind the (potentially) rich resources of Africa and other regions which are often regarded as information have-nots”. Similar observations were made by Chan

(2004), that without knowledge flow from developed to developing countries and vice versa, efforts towards combating diseases and poverty in developing countries will never meet expectations. In recognition of the importance of improving information flow into and out of developing countries, a number of initiatives from donors and the scholarly community itself have been undertaken. In these initiatives, various development agencies pay for information resources such that they can be accessed without payment or at subsidised costs by users from the developing world. Such initiatives have greatly improved the accessibility of scholarly journals to scholars in developing countries (Durrant, 2004; Kirsop and Chan, 2005; Chege, 2006; Moller, 2006).

Notable such initiatives include: Programme for the Enhancement of Research Information (PERI) of the International Network for the Availability of Scientific Publications (INASP); Health InterNetwork Access to Research Initiative (HINARI) of the World Health Organization; Access to Global Online Research in Agriculture (AGORA) of the Food and Agriculture Organization (FAO) of the United Nations; and the Online Access to Research in the Environment (OARE) scheme of the United Nations Environmental Programme (UNEP).

Although the above initiatives are very useful in the short run, they are not necessarily sustainable in the long run and there is no guarantee that they will be maintained in perpetuity. In addition, such initiatives exclude many developing countries such as India, China and Brazil and other countries that, to a large extent, are disadvantaged when compared to the developed world (Chan and Costa, 2005).

Open access (OA) is another mechanism being utilized by the scholarly community to improve accessibility and dissemination of research output globally. According to Kirsop (2008), accessibility and dissemination of scholarly content can be promoted using OA, either through the establishment of interoperable institutional repositories (IRs), which hold the research output of an organization, or the development of new open access journals, which provide equal access to all regardless of ability to pay. The worldwide acceptance of OA is considered to be the most viable solution, in the long run, to problems in scholarly communication (Chan and Costa, 2005).

However, despite the promising potential of improving scholarly communication, OA uptake in developing countries is still lagging behind in comparison to their developed world counterparts. According to the *Directory of Open Access Repositories* (DOAR), for example, more than half of the OA repositories registered by end of September 2008 were from developed countries while developing countries in totality had fewer repositories than individual countries like the USA, Germany and the United Kingdom (DOAR, 2008).

A similar trend is observed from data obtained in the *Directory of Open Access Journals* (DOAJ), which indicates that during same period, only 19 journals were

identified as being published or hosted in Africa among 3,663 journals in DOAJ (DOAJ, 2008). Such observations raised the interest of the authors of this paper regarding the prospects of OA adoption at Tanzanian public universities.

This paper is part of an ongoing doctoral study, "An analysis of open access scholarly communication in Tanzanian public universities," with the aim of investigating the factors that facilitate or hinder the prolific use of OA for scholarly communication in such institutions.

The objectives of the main study include to: (i) investigate general awareness and OA usage; (ii) identify the factors that facilitate researcher adoption of OA, and determine factors that hinder researcher adoption of OA; (iii) identify researchers' perspectives on OA repositories; and (iv) suggest strategies to resolve the hindrances to OA adoption.

The main focus of the paper is to isolate the awareness and perspectives of policy makers about open access within the public universities, i.e. Deputy vice-chancellors dealing with academic and research matters, deans of faculties/schools, and Directors of centres, directorates, and institutes. Their views regarding adoption of this new mode of scholarly communication impact the extent to which it can be adopted at their respective institutions. This is particularly true because they are the main decision makers regarding the choice of publications that are considered for academic recognition of university researchers in their career development (Bjork, 2004; Moller, 2006; Fullard, 2007). Similarly, university policy makers play a key role in the allocation of funds for the development of institutional repositories, such that without their approval, the development of OA at their respective institutions is likely to be negatively affected.

Research Methodology

This study was conducted at the main campuses of six universities from among eight public universities in Tanzania. The main criteria for selection of the participating universities was that they offered postgraduate training, had Internet connectivity and at least 10 years of their existence were as higher learning institutions. The other two public universities did not meet the selection criteria. The reasoning behind the selection criteria was that existence as higher learning institutions for at least 10 years and running postgraduate programmes implied a comparatively well established research infrastructure and generation of more research output; the assumption was that such institutions were more likely to benefit from OA initiatives than newer institutions. Furthermore, public universities were targeted by the study based on the fact that they are publicly funded and are thus obliged to make their research findings available for free to the public (Comba and Vignocchi, 2005).

The six public universities involved in the study included: Ardhi University (ARU); Muhimbili University

TABLE 1 – Distribution of interviewees

Institution	Gender		Total
	Male	Female	
ARU	9	1	10
MUHAS	8	3	11
MU	7	3	10
OUT	4	2	6
SUA	9	2	11
UDSM	9	6	15
Total	46	17	63

of Health and Allied Sciences (MUHAS); Mzumbe University (MU); Open University of Tanzania (OUT); Sokoine University of Agriculture (SUA); and the University of Dar es Salaam (UDSM). A semi-structured interview questionnaire was used for data collection from all of the 67 university policy makers in the selected universities. No sampling was made due to the manageable size of the study population. From the targeted interviewees who were eligible for the study, 63 (94%) of them were available and participated in the study. Among the interviewees, 46 (73%) were males and 17 (27%) were females. With respect to the position of the respondents: 4 were Deputy vice-chancellors (academic); 31 were Deans of faculties/schools; and the remaining 28 were Directors of centres/directorates/institutes. The distribution of the interviewees from the six public universities is shown in Table 1.

Data screening was done prior to data analysis. Incorrectly entered data were discovered by reviewing the output with respect to frequency distribution and descriptive statistics of the Statistical Package for Social Sciences (SPSS) frequency procedure. The range of values for quantitative variables was examined to make sure that no cases had values outside the range of possible values. An assessment of the means was also done to make sure that all cases had values that corresponded to the coded values. In cases where problems were identified, the researcher re-visited the data entry exercise to find the root cause of the problem and corrections were made by referring to the hard copies of the data from the interview questionnaire.

Results

Data was analysed using SPSS version 15. Content analysis was used to organize data emerging from open-ended questions for coding with other quantitative data before entering into SPSS for further analysis. The following sub-sections present results of this study.

Awareness and uptake of open access – Respondents were asked whether they had heard about OA before being

involved in this study. Among the 63 interviewees, 57 (90.5%) reported that they were aware of OA. Out of this number, 33% claimed to have heard about OA from their colleagues, 25.4% by following Internet debate, while 19% were informed through publisher promotions. Other means through which policy makers were informed about OA included [frequencies in brackets]: by chance while surfing the internet [9]; during workshops/seminars [8]; library promotion [6]; and during postgraduate training abroad [4].

When asked to indicate types of OA they were aware of, many interviewees (79.4%) claimed to know about OA journals but few had heard about other OA initiatives or terms such as OA repositories (25.4%), self-archiving (17.5%), Biomed Central (15.9%), and Budapest Open Access Initiative (3.2%).

The 63 interviewees were also asked about the state of the level of OA uptake at their respective institutions, especially at top management levels. It was revealed that:

- OA publishing had not yet been discussed at strategic or business meetings (68.3%);
- OA had been raised but not yet taken up (23.8%); and
- universities intended to institute an institutional repository (7.9%).

These results imply that despite many respondents claiming to be aware of OA, very few had a deep understanding of this mode of scholarly communication. Slightly low awareness (70%) of OA by policy makers was reported by Moller (2006) and Fullard (2007) in their studies done in South Africa. Considering the fact that OA has been known to major academic libraries the world over for many years, these findings suggest that Tanzanian university libraries have not played the expected major role in promotion of OA.

It is also evident that awareness itself is not enough to insure OA adoption. Were that true, the extent of OA adoption should tally with its awareness level. According to Fullard (2007), “knowledge of open access does not equate to changes in behaviour”. It is thus necessary to establish how policy makers perceive OA before one can judge the acceptability of this mode of scholarly communication.

Importance of institutional repositories in dissemination of research findings – Institutional repositories (IRs) are advocated by many OA proponents as means to promote and advance the visibility and impact of the research output from disadvantaged regions (Kirsop and Chan, 2005; Kirsop, 2008; Merwe and Kroeze, 2008). The study sought first to establish the various strategies employed by Tanzanian public universities in ensuring wide dissemination of their research output and whether policy makers were satisfied with such efforts to date. The study then sought to establish the importance attached to IR establishment at the respective institutions.

Requiring their academic staff to publish in local and

international journals and present research findings in seminars/conferences/workshops were identified as the main strategies employed by universities to ensure wide dissemination of research findings from the Tanzanian public universities. However, the majority of the respondents agreed (46%) or strongly agreed (44.4%) that these mechanisms of enforcing dissemination of research findings were not working and that dissemination of research at their respective universities was a problem. Only 9.5% said that it was not a problem.

On the importance of IR establishment as a strategy to improve dissemination of the research output emanating from their research institutions, 36 (57.1%) of the interviewees considered it very important, 25 (39.7%) important, and only 2 (3.2%) said it was very unimportant. Overall, these results suggest that many policy makers were favourably inclined regarding establishment of IRs at their respective institutions. However, taking into account that IR establishment requires commitment of funds by same policy makers, OA advocates in such institutions will need to come up with convincing project proposals so that IR establishment can hold its own with the other projects competing for the universities’ limited resources.

Proposed IR managers and content – After establishing the views of policy makers on the importance of IRs for their institutions, the study further sought to determine the preferences for managers and content for such repositories should they be established at their respective universities. It was observed that university policy makers preferred: university libraries (61.9%), university-wide research coordination units (19%), computer centre/ICT units (12.7%), and faculties/institutes/directorates (3.2%) for the management of IRs if established at their universities. Those who chose the library said their preference was motivated by several reasons, including the fact that: repository management is the task of the library in other places; the library is well equipped in terms of ICT facilities and expertise; and that the library has a mandate to manage information for the university and hence should also manage the repository.

Those who preferred university-wide research units also justified their choice. Their arguments were that university-wide units: control all research activities at the university, which makes it easy to track research output for inclusion in the repository; are mandated with coordination and dissemination of research findings; are more representative for the whole university; and are responsible for quality control of publications from the university and hence are well positioned to manage the IR. Preference for faculties/institutes was due to the fact that it would make the review process less bureaucratic because the people who form the review panel and the publications for review are located at such units.

Policy makers were further asked to suggest acceptable materials for deposit in the repository. Table 2 presents the results regarding preferred IR content. It was

noted that the most preferred repository content, in priority order, were: conference papers, peer reviewed journal articles, theses/dissertations, and teaching materials. Non-peer reviewed articles were least preferred to be included in the repository. Research reports, consultancy reports and annual institutional reports [in priority order] were among the additional publications highly ranked by researchers for inclusion in the IRs. It is evident from these results that most of the research output that remains invisible in the conventional publishing system may be widely visible and accessible through IRs if adopted by the respective universities.

Prospects for open access endorsement by policy makers – To determine the prospects for OA development in Tanzanian public universities, the interviewees were asked to rate their willingness to support several strategic interventions that would likely foster OA uptake within their institutions. They were also asked to give general comments about this new mode of scholarly communication. Table 3 presents a summary of the results of this investigation.

To be noted from the table is that the majority of the respondents would either support or were likely to support most of the interventions for fostering of OA at their respective institutions. Particularly interesting is the observation that most policy makers had no problem with the recognition of OA publications in career development so long as such publications meet the required standards, which would apply to non-conventional publications as well. This is corroborated by Fullard (2007), who observes that “without some adjustment of the criteria used to evaluate researchers, it is unlikely that there will be any change in the publishing patterns of researchers”.

The ‘publish or perish’ system is used in all the universities involved in this study such that no researcher can be promoted to higher university ranks [lecturer to professor] without publishing evidence in the so-called recognized or accredited journals. For a journal to be included in the list for recognized journals, it had to be approved by respective university committees responsible for annual performance evaluation of researchers. For journals to be accredited or recognized, they must meet certain conditions such as: have an established editorial

TABLE 2 – Preferred institutional repository content

Preferred content	Frequency	Percent
Conference papers	55	87.3
Peer reviewed articles published in a journal	54	85.7
Theses/dissertations	50	79.4
Teaching materials	41	65.1
Articles waiting peer review in a journal	18	28.6
Non-peer reviewed articles published in a journal	17	27

TABLE 3 – Policy makers' views in fostering open access development (N= 63)

Statement	Support likelihood			
	Would support	Would likely support	Would need more information	Would not support
Explicit recognition or reward for open access publications	40 (63.5)	12 (19)	11 (17.5)	0
Recommend researchers to retain copyright for publications	45 (71.4)	10 (15.9)	7 (11.1)	1 (1.6)
Establish policy to require faculty deposit research output in institutional repository	43 (68.3)	15 (23.8)	4 (6.3)	1 (1.6)
Sponsor author charges in open access journals	42 (66.7)	12 (19)	5 (7.9)	4 (6.3)
Sponsor publication of institutional journals so that they become openly accessible	41 (65.1)	11 (17.5)	3 (4.8)	8 (12.7)

board; be widely circulated; journal issues should appear regularly and should be published either in print or electronic formats.

However, it is questionable whether it is practical for Tanzanian universities to use predetermined journal lists for their staff evaluation, especially if the current proliferation of journals is taken into account. Ironically, it was noted from the Sokoine University of Agriculture that the recognized journal list that was in use at the time this paper was written was last updated in 2002 (Sokoine University of Agriculture, 2002). Under such circumstances, it is more practical to use established journal assessment criteria for evaluating staff performance to evaluate the journal - recognized or not - in which the staff being evaluated published. This approach would give researchers more freedom in choosing journals in which to publish, taking into account the journal quality aspects.

The general perspectives of policy makers regarding OA were assessed based on the interviewees' general comments about OA. Some of synthesized extracts from the

TABLE 4 – Policy makers' general comments on open access

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> ▪ OA is good, it should not be limited to universities alone but should be adopted nation wide. ▪ University policies should be reviewed to consider open access publications in career development. ▪ Open access is good for sharing research results as well as increasing researchers' and institutions' recognition internationally. ▪ Open access increases collaboration of researchers internationally. | <ul style="list-style-type: none"> ▪ Open access is important but it is new, there is need for more sensitisation and supporting it with university policies. ▪ Create awareness for positive perceptions on quality and value of open access publications. ▪ Open access is especially good for countries with limited access and dissemination of research findings. ▪ There is no reason to hide academic work, so I support open access. ▪ Open access is good, it will benefit distance learning students. | <ul style="list-style-type: none"> ▪ Good initiative, promote and implement it. ▪ Open access depends on Internet, so connectivity should be improved for more researchers to benefit. ▪ Open access is good but non quality free journals and poor Internet remain the main challenges. ▪ It is unacceptable/difficult making publications free of charge, hence don't support open access. |
|--|--|--|

open-ended question regarding policy makers' comments on OA are provided on Table 4. Overall, the majority of the interviewees were very positive about OA, while a few of them had some reservations. However, further lobbying and advocacy would be required to convince those who do not support OA or are undecided due to a lack of details about the new scholarly communication mode. This is also evident from some of the comments by policy makers pointing out the need for more sensitization and awareness creation among a various university stakeholders.

Policy and Managerial Implications of the Study Findings with Respect to Agricultural Sector

Among other aspects, access to agricultural information is a prerequisite for the development of the agricultural sector, which employs the majority of the population in developing countries. Despite its importance, access and dissemination of agricultural information in most developing countries has been difficult at best under the current scholarly publishing business model (Dulle et al, 2001; Chailla, 2001; Mook, Munyua and Nampala, 2005). As noted in the introductory portion of this paper, open access has great potential for improving both access to and dissemination of information.

This study has established that a majority of university policy makers support of OA publishing among the various alternatives to improve dissemination of research content. Since the study also involved the SUA, which is the only agricultural university in the country, observations from this study also partly touch upon agricultural sector research institutions. The establishment of IRs, for example, could make research results readily accessible to all agricultural stakeholders including policy makers, researchers, extension workers, farmers

and others interested in the improvement of agricultural sector productivity.

For research results to be useful to all stakeholders, the results need to be repackaged before they are deposited in an IR in order to meet the different needs of the user community. On the one hand, extension workers and farmers could access utilizable technologies emerging from research more easily through IRs than by using conventional means requiring direct contact with the technology developers. The same information may also be easily accessed by policy makers for planning purposes. On the other hand, by making research findings openly accessible through IRs, duplication of research efforts among researchers could be minimized. This will enable researchers to investigate new aspects of technology by building on existing knowledge that is readily accessible through IRs.

The Sokoine National Agricultural Library (<http://www.suanet.ac.tz/lib/about.html>) based at SUA, having a mandate to carry out the co-ordination and management of agricultural information in the country and also acting as a national bibliographic and documentation centre in agricultural related information, stands a better chance to host the national agricultural information repository. This would be a more economical approach than for each agricultural research institution in the country to establish its own repository.

The library in question should take a lead in sensitization of policy makers and other stakeholders in the National Agricultural Research Institutes on the importance of OA and IRs in particular for dissemination of research outputs from such institutions. In collaboration with the Ministry of Agriculture information professionals, this library should also develop strategies to mobilize funds from the government and other development agencies for the establishment of national agricultural information IRs.

Conclusion and Recommendations

Findings from this study indicate that even though the majority of policy makers in Tanzanian public universities are aware of OA, they are poorly informed on specific OA concepts or initiatives. This implies that they lack a clear understanding of the benefits and perhaps inherent issues regarding this new mode of publishing. However, from these findings, it was established that there is a positive inclination among many policy makers to support IR establishment as a way to address the problems associated with the dissemination of research outputs emanating from these universities.

Most policy makers further indicated that they would support most of the interventions or initiatives geared towards stimulation of OA adoption at their respective institutions. However, it was clear from the same findings that none of the universities under study were already implementing OA publishing, especially through their IRs.

In an environment of limited resources faced by most of the universities, it is unlikely that policy makers will pay much attention to the establishment of IRs. However, positive attitudes towards OA should allow OA advocates to enter their campaigns with confidence, as they are unlikely to meet much resistance from such stakeholders.

It is important for librarians and other information workers from such institutions to take a lead in formulating convincing project proposals with respect to IR establishment for consideration by university policy makers. Furthermore, more OA advocacy should be directed at university policy makers and university researchers to educate them about the benefits of OA and garner their increased support.

Librarians and other university information professionals are called upon to play a leading role in OA publishing development in the institutions under study because the current trend in library services has already placed libraries at the centre of the OA equation. In addition, many of the respondents of this study considered libraries as their preferred IR managers at their universities.

Finally, OA initiatives should be promoted on the national level in order to enhance the visibility of all Tanzanian research output. This could be accomplished through a national strategy.

Acknowledgement

We would like to acknowledge Research on Poverty Alleviation (REPOA), a non Governmental organization based in Dar es Salaam, Tanzania, for funding the data collection for this study. It would have not been possible to conduct this study without such a support.

References

Academy of Science of South Africa (ASSAF). 2006. *Report on the strategic approach to research publishing in South Africa*. Pretoria, ASSAF.

Aronson, B. 2004. "Improving online access to medical information for low-income countries." *New England Journal of Medicine* 350(10): 966–8. As cited in L. Chan and S. Costa, "Participation in the global knowledge commons: challenges and opportunities for research dissemination in developing countries," *New Library World* 106(3/4): 142.

Bjork, B. C. 2004. "Open access to scientific publications—an analysis of the barriers to change." *Information Research* 9(2): paper 170. <http://InformationR.net/ir/9-2/paper170.html>

Chan, L. 2004. "Supporting and enhancing scholarship in the digital age: the role of open access institutional repositories?" *Canadian Journal of Communication* 29: 277–300. <http://eprints.rclis.org/archive/00002590>

Chan, L., and S. Costa. 2005. "Participation in the global knowledge commons: challenges and opportunities for research dissemination in developing countries." *New Library World* 106(3/4): 141–53.

Chailla, A. M. 2001. *Implementation of policies and strategies for agricultural information access and use in Tanzania*. PhD thesis, University of Natal.

Chege, K. 2006. "Scientists get free access to environmental journals." *SciDev.Net: News*. <http://www.scidev.net/en/news/scientists-get-free-access-to-environment-journals.html>

Chisenga, J. 1999. "Global information infrastructure and the question of African content." In *Proceedings of 65th IFLA council and general conference*, August 20–28, 1999, Bangkok, Thailand. <http://www.ifla.org/IV/ifla65/papers/118-116e.htm>

Comba, V., and M. Vignocchi. 2005. *Scholarly communication and open access: research communities and their publishing patterns [New trends in scholarly communication: how do authors of different research communities consider OA?]*. <http://eprints.rclis.org/5779/1/oslo.pdf>

DOAJ: Directory of Open Access Journals. 2008. <http://www.doaj.org>

DOAR: Directory of Open Access Repositories. 2008. <http://www.opendoar.org>

Dulle, F.W., M.J.F. Lwehabura, R.T. Mulimila, and D.S. Matovelo. 2001. "Researchers' perspectives on agricultural libraries as information sources in Tanzania." *Library Review* 50(4): 187–192.

Durrant, S. 2004. "Overview of Initiatives in the Developing World." In *Open Access and the Public Domain in Digital Data and Information for Science: Proceedings of an International Symposium*, March 10–11, 2003, Paris. <http://www.nap.edu/html/openaccess/122-126.pdf>

Fullard, A. 2007. "South African responses to open access publishing: a survey of the research community." *South African Journal of Libraries and Information Science* 73(1): 40–50.

Kirsop, B. 2008. "Open access to publicly funded research information: the race is on." *DESIDOC Journal of Library and Information Technology* 28(1): 41–48. <http://publications.drdo.gov.in/ojs/index.php/djlit/article/viewFile/251/111>

Kirsop, B., and L. Chan. 2005. "Transforming access to research literature for developing countries." *Serials Review* 31(4): 246–255.

Matovelo, D. S., and A. M. Chailla. 1999. "Documentation and dissemination of agricultural research results in Tanzania: Avenues and challenges." *Tanzania Journal of Agricultural Sciences* 2(1): 99–106.

Moller, A. M. 2006. *The case for open access publishing, with a special reference to open access journal and their prospects in South Africa*. MA Dissertation (Unpublished), University of the Western Cape. <http://eprints.rclis.org/5815/1/MollerThesis.pdf>

Mook, B., H. Munyua, and P. Nampala. 2005. Report on the baseline study of agricultural information in the Eastern and Central Africa Region. Unpublished consultants' report submitted to the Regional Agricultural Information Network (RAIN), Entebbe, Uganda.

Nwagwu, W. E., and A. Ahmed. 2009. "Building open access in Africa." *International Journal of Technology Management* 45(1/2): 82–101.

Onyancha, O. B. 2007. "LIS research in Africa: how much is it worth? A citation analysis of literature, 1986–2006." *South African Journal of Libraries and Information Science* 73(2): 95–108.

Sokoine University of Agriculture. 2002. List of recognised journals. Unpublished. Sokoine University of Agriculture. <http://www.suanet.ac.tz/drpgs/publications.html>

Van der Merwe, A., and J. H. Kroeze. 2008. "Development and implementation of an institutional repository within a Science, Engineering and technology (SET) environment." In *Proceedings of the 2008 annual research conference of the South African Institute of Computer Scientists and Information Technologists on IT research in developing countries: riding the wave of technology*, October 6–8, 2008, Wilderness, South Africa, 237–245. <http://portal.acm.org/citation.cfm?id=1456687>

Xia, J. 2006. "Scholarly communication in East and Southern Asia: traditions and challenges." *IFLA Journal* 32(2): 104–112.

Yiotis, K. 2005. "The open access initiative: a new paradigm for scholarly communications." *Information technology and libraries* 24(4): 157–162.

FRANKWELL W. DULLE is Senior Librarian, Sokoine University of Agriculture, Morogoro, Tanzania.

PROF. M. K. MINISHI-MAJANJA is Associate Professor, Department of Information Science, University of South Africa, Pretoria.

Contact Information

Frankwell W. Dulle
Sokoine University of Agriculture
P.O. 3022
Morogoro
TANZANIA
E-mail: fwdulle@suanet.ac.tz or nzengamshe@yahoo.com
Web: <http://www.suanet.ac.tz>

Prof. M. K. Minishi-Majanja
Department of Information Science
University of South Africa
P.O. Box 392
Pretoria, 0003
SOUTH AFRICA
E-mail: majanmk@unisa.ac.za
Web: <http://www.unisa.ac.za>

Juggling Copyright and Open Access in the 21st Century: A South African Case Study

Siphethile Muswelanto, Adèle van der Merwe, and Martie van Deventer

EDITOR'S NOTE: This paper was presented at the 2nd Conference of the IAALD Africa Chapter, July 15–17, 2009, Accra, Ghana.

KEYWORDS: Copyright; Open Access; CSIR ResearchSpace; Institutional Repositories

ABSTRACT: When establishing an institutional repository (IR), one of the first questions an organization should ask is: 'How can we promote open access (OA) and still adhere to the restrictions of copyright?' The Council for Scientific and Industrial Research (CSIR) in South Africa has also had to deal with this duality. The main purpose of this paper is to share the processes and systems that ensure that CSIR adheres to legal requirements while providing OA to research publications.

For copyright clearance, we make extensive use of SHERPA RoMEO. However, the most important mechanism in our copyright management process is a comprehensive document management workflow system. The system manages the reporting of all our explicit intellectual outputs—OA and proprietary.

This paper aims to highlight how publications archived in an IR can be shared and disseminated without legal infringements, and highlights some of the global initiatives to ensure a better flow of information to and from developing countries. It also provides clear evidence that traditional copyright processes and OA can exist together harmoniously.

RESUMÉ: En établissant un dépôt institutionnel (DI), une des premières questions qu'une organisation devrait se poser est: «Comment pouvons-nous promouvoir l'accès ouvert (AO) tout en adhérant aux restrictions du copyright»? Le Conseil pour la recherche scientifique et industrielle (CSIR) en Afrique du Sud a aussi dû traiter cette dualité. Le but principal de cet article est de partager les processus et les systèmes qui garantissent l'adhésion du CSIR aux conditions légales tout en fournissant l'AO aux publications sur la recherche.

Pour le dégageant de copyright, nous faisons grand usage de SHERPA RoMEO. Cependant, le mécanisme le plus important

dans notre processus de gestion du copyright est un système détaillé du flux de travail pour la gestion documentaire. Le système gère l'enregistrement de toutes nos productions intellectuelles explicites—d'AO et de propriété.

Cet article vise à mettre en évidence les moyens possibles pour partager et diffuser les publications archivées dans un DI sans enfreindre la loi, et met l'accent sur quelques initiatives globales pour assurer un meilleur flux de l'information à partir des pays en développement ou vers ces pays. Il fournit aussi une preuve claire que les processus de copyright traditionnel et l'AO peuvent exister ensemble harmonieusement.

RESUMEN: Cuando se establece un repositorio institucional (RI), una de las primeras preguntas que una organización debe hacerse es la siguiente: ¿Cómo podemos promover el acceso libre (AL) y mantener nuestra adhesión a las restricciones impuestas por los derechos de autor? El Consejo para la Investigación Científica e Industrial (CSIR, en inglés) de África del Sur también ha tenido que enfrentar esta dualidad. El principal objetivo de este artículo es compartir los procesos y sistemas que garantizan que el CSIR adhiere a los requisitos legales mientras permite el AL a las publicaciones sobre investigación.

Para cumplir con los derechos de autor, hacemos un uso generalizado del portal de servicios SHERPA/RoMEO. Sin embargo, el mecanismo más importante de nuestro proceso de manejo de los derechos de autor es un sistema de flujo de trabajo integral en cuanto al manejo de los documentos. El sistema maneja los informes de toda nuestra producción intelectual explícita, tanto la de AL como la que posee derecho de propiedad.

Este artículo busca enfatizar la forma en que las publicaciones archivadas en un RI pueden compartirse y difundirse sin cometer transgresiones legales, y hace resaltar algunas de las iniciativas globales para asegurar la mejor circulación de la información hacia los países en desarrollo y desde ellos. Proporciona también evidencia clara de que los procesos tradicionales de derechos de autor y el AL pueden coexistir de manera armónica.

Introduction

South Africa is used as a metaphor for Africa's southern region, because South Africa accounts for 91% of the Southern African Customs Union (SACU) regional economy and houses 87% of the regional population. South Africa's regional leadership in manufacturing, and consequently, regional export, extends to the publishing industry, as it is also responsible for much of the research information from Africa. The country manufactures 95% of SACU's net industrial output and is responsible for 88% of the export in the region. However, despite these achievements, education in South and Southern Africa is characterized by general underperformance (Rens, Prabhala, and Kawooya, 2006).

It is clear that the availability of learning materials will remain a crucial component of elevating research and education performance. However, the availability of these materials is often constrained by access limitations. But this constraint may soon be overcome as the open access (OA) movement continues to gain momentum, making access to high quality research outputs easier and faster.

Open access is free and unrestricted online availability of scientific literature (Budapest Open Access Initiative, 2002). There are two primary approaches to OA: (i) publishing articles in open access journals (OAJ); and (ii) depositing copies of articles, post-print or pre-print manuscripts by the authors in open access archives (OAA) or institutional repositories (IRs). This is also

called self-archiving. But OA does not mean total abandonment of intellectual property (IP)—specifically of copyright.

South Africa has a long history of protecting IP. Our system stems from its colonial past and is based upon that of the United Kingdom. When South Africa became a signatory to the Berne Convention, it accepted the fact that a member state must afford protection to other member states in the same manner as it provides protection to its own citizens. The South African Copyright Act 98 of 1978 (http://ftp.shf.org.za/act_copyright.pdf) governs the copyright law in the country. It has been amended several times, the latest being the Copyright Amendment Act 9 of 2002. The South African Intellectual Property Rights from Publicly Funded Research Bill (IPR Act / <http://www.pmg.org.za/files/bills/o8o815b46b-o8.pdf>) is the most recent addition to our IP protection armament. The Act is regarded as a challenge for OA because researchers are unsure how it will impact their work outputs.

Researchers are sceptical about OA self-archiving (Open Access to Scholarly Publishing). They believe that their work should only be published in commercial journals. Understandably, this fear is encouraged by those who make a living from selling intellectual outputs.

In our opinion, the issue needs to be managed rather than to discourage the use of OA.

Against this back drop, the Council for Scientific and Industrial Research's (CSIR / <http://www.csir.co.za/>) IR, known as CSIR ResearchSpace (<http://researchspace.csir.co.za/dspace/>), has a clearly stated objective of rapidly increasing the repository's content. This objective can only be attained by building good relationships with our researchers and by continuously advocating the advantages of running an OA repository within legal boundaries.

Copyright Context and Initiatives

South Africa does not practice its copyright in isolation but it provides a unique context for our OA initiatives. South Africa is also very aware of international initiatives to monitor and advise copyright as it impacts the developing world. The section below provides some of that context.

Copyright – *Copyright law is an aspect of intellectual property law that seeks to invest authors with monopoly right or control over their creative work including the right of exploitation to their work as well as the right to “ensure that their work is properly credited and is not changed in a way that harms the author’s reputation” (Vaver, 2000).* As was stated above, South African copyright law is guided by the Copyright Act of 1978. The Act protects, amongst other formats, literary works, computer programmes, radio and television broadcasts, satellite transmissions and published editions. Unlike other forms of IP, copyright is a right that does not need to be registered as it automatically vests with the authors (Smit and Van Wyk, 2007). In general however, when an author decides to

make use of a publisher, s/he often cedes this copyright to a third party. Ceding copyright is often, but not always, a formal process where the author signs a document that states clearly s/he is ceding copyright. Experience shows that authors seldom understand that this means losing ownership of their own work.

Longe (2009) lists several reasons why the digital age is causing concern for copyright owners. However, nowadays authors do have an alternative option; through OA, researchers are able to publish their work directly in repositories or in OAJs. (This form of publishing is also known as the “golden” road of OA [Velterop, 2006]). Works published in OA are freely and immediately accessible upon publication. However, OA does not mean that there is no copyright. It only means that the author gives the user the right to use a particular work free of charge. However, the work still remains subjected to proper acknowledgement, i.e. the user is not allowed to claim that s/he was responsible for the intellectual output.

With the emergence of OA, some commercial publishers are changing their approach and in such instances an author (or author surrogate) can negotiate to cover the publication costs of the article on condition that the work is then made available OA. In other instances, the journal publisher agrees to make items available OA under specified conditions. SHERPA RoMEO (2009) is a service that provides details regarding the negotiated copyright and self-archiving policy agreements of various publishers. At CSIR, it is the responsibility of the IR Professional to check SHERPA RoMEO for these policies to ensure that the content of the IR adheres to these policies at all times. South African publishers are currently under-represented in this service and therefore require direct individual negotiations.

At CSIR, OA self-archiving is not only used for research articles. We also make reports and other research artifacts available. CSIR researchers are willing and eager participants of OA self-archiving. They are enjoying the advantage of having their work made accessible while the organization is maximizing its research impact. We have found that researchers are also especially grateful for initiatives like Creative Commons (CC / <http://creativecommons.org/>) that provide a variety of OA licences for making work available in OA.

Copyright and the Developing World – There are several digital ways and means to prevent the duplication of digital objects (Longe, 2009). Such measures are certainly necessary, but much has been written on how strict copyright could be regarded as a hindrance to the development of Third World countries. Although he did not specifically state that he regards copyright as a hindrance, Christian (2008) provided detailed background on copyright and its implications for Nigerian repositories. Nicholson (2007) is much blunter about the situation — as she puts it:

Copyright is a barrier to accessing information and exchanging knowledge in Africa. Copyright has be-

come a tollgate on the information super-highway. Copyright is a burden for African countries. It is not working for Africans, but it is definitely working for developed countries. It has become a sophisticated income-protection mechanism for rights owners, particularly foreign corporations. Rights owners claim that copyright encourages creativity and provides an income for local authors. Yet, the main beneficiaries of copyright are foreign publishers, not Africans.

OA is an answer to the limitations stemming from copyright as it is exerted by publishers because it enables researchers from the developing world to gain unrestricted access to knowledge and information with no additional financial implications. Harnad and Brody (2004) point out that many journals are already granting authors the right to make their work accessible in OA, providing certain conditions are met. It therefore makes sense to collaboratively align initiatives and leverage international OA initiatives. The following are just a few of the many initiatives within developing countries that contribute towards ensuring a better flow of information, both to and from the developing countries.

Access to Knowledge – The Access to Knowledge (A2K) initiative aims to build an intellectual framework that will protect access to knowledge both as the basis for sustainable human development and to safeguard human rights. It aims at restoring balance and being able to provide checks and balances between rights holders and users, while supporting and promoting new business models of OA and open source software (Nicholson, 2007).

African Copyright & Access to Knowledge – The African Copyright & Access to Knowledge (ACA2K / <http://www.aca2k.org/>) project is examining the relationship that exists between national copyright environments and access to knowledge in eight African countries. The project looks at this relationship within an access to knowledge framework, i.e. a framework that regards the protection and promotion of user access as one of the central objectives of copyright law. This project, which is supported by Canada's International Development Research Centre (IDRC) and South Africa's Shuttleworth Foundation and managed by the LINK Centre at the Wits University Graduate School of Public & Development Management (P&DM) in Johannesburg, currently has research teams in Egypt, Ghana, Kenya, Morocco, Mozambique, Senegal, South Africa and Uganda.

African Access to Knowledge Alliance – The African Access to Knowledge Alliance (AAKA) initiative was born from a co-operative working relationship between Denise Nicholson, a keen activist for better access to knowledge in Africa, and Dick Kawooya, a Ugandan post-graduate student at the University of Tennessee (USA). AAKA was registered as a continental body in Botswana in 2007. It is currently involved in the ACA2K project mentioned above. Its short term objectives are to: introduce AAKA to institutions of learning throughout

Africa; promote the formation of country Chapters of AAKA; engage in a massive recruitment drive for membership; and convene a constitutional continental AAKA General Assembly (Nicholson and Thutoetsile, 2007).

Ultimately the initiatives mentioned above are intended to legally increase the efficiency of information flows to and from developing countries. Of course, copyright monitoring is not the only way to increase these efficiencies. An additional way to do so is to allow the harvesting of IR metadata.

Open Access Initiatives

Much has been written about OA, OA initiatives, and the advantages of OA for the developing world in general and Africa in particular (Bothma, Pienaar and Hammes, 2008; Chan and Costa, 2005; Keats, 2003; Suber, 2007). It is not our intention here to give an extensive overview of OA. However, it is necessary to understand that an IR does not, and should not exist, in isolation. There simply are too many repositories to allow efficient searching by researchers. As a result, there are several international and country-wide initiatives to ensure that repository content is surfaced. It is anticipated that harvesting initiatives will soon implement some form of auditing to ensure that the repositories they are harvesting from are providing metadata that meets acceptable standards and adheres to legal requirements. CSIR is well aware of the initiatives mentioned below, as we are contributing our content wherever possible.

International OA Initiatives

Directory of Open Access Journals (DOAJ) – The Directory of Open Access Journals (DOAJ / <http://www.doaj.org/>) initiative was one of the first attempts to collect, evaluate and organize OA journals. CSIR does not currently directly contribute to the initiative as it does not publish journals, but we are ensuring that our researchers are aware of and gain access to the journals.

Directory of Open Access Repositories (DOAR) – The Directory of Open Access Repositories (DOAR / <http://www.opendoar.org/>) initiative was one of the first to attempt to collect, evaluate and organize OA repositories. CSIR's repository was accepted by the initiative soon after it was launched.

DRIVER – So far DRIVER (Digital Repository Infrastructure Vision for European Research) is the largest initiative to enhance repository development worldwide. DRIVER (<http://www.driver-repository.eu/>) is “a multi-phase effort with the vision and primary objective to create a cohesive, robust and flexible, pan-European infrastructure for digital repositories, offering sophisticated services and functionalities for researchers, administrators and the general public. DRIVER offers a common platform for OA output, which implies no access barriers to the full-text.” The whole DRIVER community actively participates in the OA movement and advocates digital repositories as the principal location for research

material to be deposited. CSIR is monitoring progress and will be participating when it is possible to do so.

WorldWideScience.org – WorldWideScience (<http://worldwidescience.org/>) is a programme that aims to make scientific databases and portals available at the national and international levels. The alliance currently has 14 members, and CSIR is one of these. The WorldWideScience Alliance grew from the realization that while scientific progress has steadily increased over the years, global collaboration is now required to make the output of the scientific endeavor accessible by and to a larger science community. The association promises “to accelerate access to worldwide scientific knowledge.”

iCommons – Incubated by Creative Commons, iCommons (<http://icommons.org/>) is an organization with a broad vision to develop a united global commons by collaborating with open education, access to knowledge, free software, OA publishing and free culture communities around the world. “Using the annual iCommons Summit as the main driver for the iCommons vision, iCommons will feature projects that encourage collaboration across borders and communities, and promote the tools, models and practice that facilitate universal participation in the cultural and knowledge domains.”

Open Access Initiatives in Southern Africa – Some of the better known OA initiatives in the Southern African region are mentioned below.

Sivulile – Sivulile (<http://www.sivulile.org/>) in isiXhosa means “We are Open” and expresses South African support for the global OA movement. Sivulile is a loosely-defined group of individuals, centered in South Africa but currently without official members. Sivulile involves people who actively participate in work on advocacy, support, policy, technology and research on OA as part of their core work functions in various organizations and institutions.

Digital Imaging South Africa – Digital Imaging South Africa (DISA / <http://www.disa.ukzn.ac.za/>) is a non-profit initiative, sponsored by the Andrew W. Mellon Foundation, for cooperation among research libraries and archives in Southern Africa. The aim of DISA is to make Southern African material of high socio-political interest, which would otherwise be difficult to locate and use, accessible to scholars and researchers worldwide (Peters, 2007).

Open Access at the Human Science Research Council – The Human Sciences Research Council (HSRC / <http://www.hsrc.ac.za/>) is the first functional OA publisher in South Africa, with more than 400 titles available from its website. HSRC publishes more than 50 titles per year. The Council has become the leading research publisher in the country and it is extensively used by politicians, researchers and journalists.

National Research Foundation Electronic Thesis and Dissertations Initiative – The South African National Research Foundation (NRF) has a mandate to promote access to information. It provides custodial and techni-

cal support to institutions that do not yet have the capacity to host their own IRs. In addition, NRF actively seeks out and provides funding and support for the development of full-text repositories (Selematsela and van der Berg, 2007).

CSIR and Open Access

Being one of the largest research councils on the continent, CSIR is a very complex organization. This complexity is due to not only the depth and the variety of our research, but also our funding streams and the variety in our stakeholder groupings. As a result, we need to carefully and continuously think about the ways and means that we could use to participate in initiatives such as OA.

The largest and certainly most important of our funders is the national government. You might assume that all such research needs to be made openly and freely available—as that is part of our mandate. Yet CSIR is also responsible for creating IP that would make the country more competitive. In such instances, we are guided by the newly promulgated IPR Act and would not be able to place the knowledge in the public domain. Similarly CSIR does contract research for a large number of private companies. In such cases, the research contract would stipulate what could be placed in the public domain.

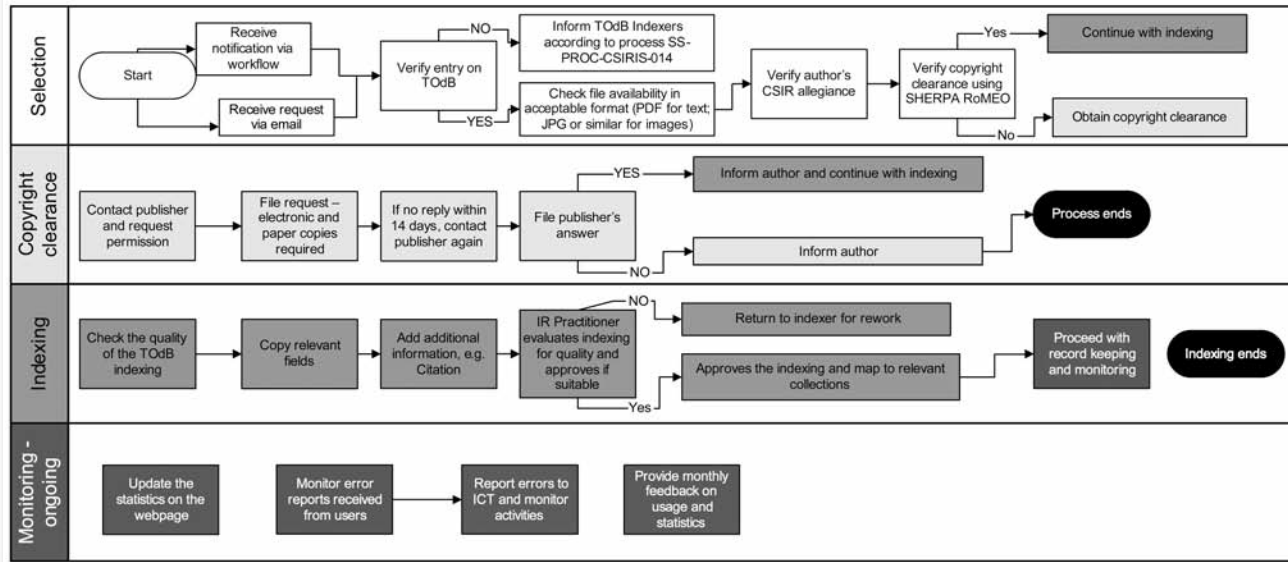
CSIR therefore opted for a phased approach in terms of selecting items for its repository, CSIR ResearchSpace. The first phase (18 months in duration) focused on ‘green route’ publications, while we also experimented with research report collections (where we hold the copyright) and with digital artifacts such as videos and small datasets. During the second phase, which has just started, we intend to focus on making our research reports and datasets available, while the final phase will focus on the digitization of our older material (research that was done prior to 1990). These focus areas will obviously run simultaneously with the continued effort to ensure that current publications are uploaded as and when copyright clearance has been granted.

We make use of a workflow system to ensure that we continuously follow the correct procedures and so that individual items are not overlooked or uploaded into the system without the appropriate clearance (van der Merwe and van Heerden, 2008). The repository, as well as the processes we follow, is discussed in more detail below.

CSIR ResearchSpace – CSIR ResearchSpace, the organization’s OA IR, gives access to a subset of a much larger but restricted database, the Technical Outputs Database (TOdB). Its objectives are to:

- enable CSIR’s mandate to generate and share knowledge and information with the citizens of the country and in doing so to contribute to national development,
- position the organization as a major generator of knowledge in Africa,

FIGURE 1 – CSIR Document Management Workflow System



- make full use of a range of communication technologies available to disseminate research outputs,
- harness existing infrastructure and capacity (which may include collaboration projects with selected research groups), and
- facilitate access to as wide a range of CSIR knowledge outputs as is feasible.

CSIR ResearchSpace is administered by a dedicated advisory group that is responsible for all services, content, submission, distribution, privacy and licensing issues of the repository. The repository was launched on August 1, 2007. In the past 18 months, the repository content has been increasing steadily and an increasing number of researchers are seeing the benefits of having their publications in OA. Visibility and high citation ratings are reported to be two of the most important benefits of an IR and our researchers testify to these benefits. The repository, as was explained earlier, currently mainly contains published material authored by CSIR research staff after 1990. Publications range from research articles, conference papers, presentations, and posters to selected research report collections. CSIR corporate publications, such as *CSIR eNews*, *CSIR Annual Reports* and CSIR's journal *ScienceScope* (the target audience is our stakeholders and it mainly showcases CSIR's thematic work), are also included.

Initially the repository was promoted through a series of a 'road shows' at the various CSIR research units. One of the important concerns that CSIR researchers raised during the presentations was copyright. The researchers needed to understand the impact of depositing their work in an OA environment and that appropriate policies and procedures had been put in place to manage all copyright related issues. A workflow system was put in place, with step-by-step channels of handling copyright issues forming an important part of the workflow. The

result was that the majority of researchers now willingly support OA activities. However, the process of depositing materials in the repository is mediated. Even though our application, DSpace (<http://www.dspace.org/>), allows for self archiving, our workflow process ensures that CSIR follows the correct copyright clearance procedure.

Populating the repository has been an extensive exercise for CSIR, with close to 2,600 items being added to the repository since its launch in 2007. As its content grows, so does the IR's usage. At this writing, an average of over 25,000 full text articles are downloaded each month. With such usage, we are very aware of the fact that we need to manage copyright clearance correctly.

Management of Copyright – the CSIR way – Notification that appropriate items have been completed and are ready to be added to TODB and ResearchSpace are sent via the workflow system. The TODB operates within the CSIR firewall and includes references to documents that cannot be made publicly available, such as classified reports, legal documents, memoranda of understanding (MOUs), and contracts, to mention but a few. ResearchSpace, in turn, only documents those items that could be placed in OA. Figure 1 illustrates the workflow system that has been put in place to manage the entire procedure.

The workflow process allows the author of the document to activate a request to include an item in the repository by ticking an appropriate selection box. Once the requestor/researcher completes the electronic request to have an item indexed on ResearchSpace, e-mails are generated by the system notifying the administrator of the request. Part of the responsibility of the administrator is to ensure that copyright clearance is available (through SHERPA RoMEO) or alternatively, to request copyright clearance.

If a policy for a specific publication is listed on SHERPA RoMEO, ResearchSpace indexing continues, and at the end of the process the requestor receives a notification

via workflow to approve the quality of the indexing. The author is also able to request rework — should that be necessary.

If the publication policy is not listed on SHERPA RoMEO, a request for copyright clearance is submitted directly to the publisher and a record is kept of the request so that the request can be monitored.

Obtaining Copyright from a Third Party – The ResearchSpace administrator is responsible for handling all copyright related issues. Requests sent through to publishers are formal — in written form and on the organization's letterhead (an example is available in Appendix A). Copyright approvals or rejections received from publishers are kept in a closed collection in the IR. In addition, a hard copy file is also used as the legality of digital copies is still under discussion.

A problem for the ResearchSpace staff has been the time wasted waiting for publishers to respond to requests. Within seven days after a request was sent through for indexing on ResearchSpace, the requestor receives a notification via workflow stating that the request is pending and that it has not yet been processed. Researchers are eager for their items to be searchable by Google and other search engines and become frustrated with this delay. After 14 days of not receiving a response from a publisher, a second request is sent out by the ResearchSpace administrator.

If a request is declined, the indexing process ends and the author is notified, via e-mail, explaining that permission to place the item in ResearchSpace was not granted. If permission is granted, the item is indexed and made available within 24 hours.

Granting a Non-exclusive Distribution Rights License – Finally, before an item is deposited in the repository, the author is informed that it is now legal to deposit the item and is reminded that by submitting the item to ResearchSpace, they are agreeing to the terms of the IR's non-exclusive distribution rights license. Granting a non-exclusive distribution rights license is the last step of the workflow. This process eliminates a fear that many researchers have, i.e. that they would be transgressing copyright law. The license states that the copyright owner retains full copyright of the work. The non-exclusive distribution rights license used at CSIR is shown in Figure 2.

Metadata Record on ResearchSpace – The metadata record appropriately acknowledges the copyright owner of the work. To acknowledge the copyright owner, unambiguous fields are used. The publisher's field displays the third party's name, i.e. the publisher to whom the author had transferred copyright. In ResearchSpace the

FIGURE 2 – CSIR ResearchSpace Non-exclusive Distribution Rights License

NON-EXCLUSIVE DISTRIBUTION LICENSE

By signing and submitting this license, you (the author(s) or copyright owner) grants to the CSIR the non-exclusive right to reproduce, translate (as defined below), and/or distribute your submission (including the abstract) worldwide in print and electronic format and in any medium, including but not limited to audio or video.

You agree that the CSIR may, without changing the content, translate the submission to any medium or format for the purpose of preservation.

You also agree that the CSIR may keep more than one copy of this submission for purposes of security, back-up and preservation.

You represent that the submission is your original work, and that you have the right to grant the rights contained in this license. You also represent that your submission does not, to the best of your knowledge, infringe upon anyone's copyright.

If the submission contains material for which you do not hold copyright, you represent that you have obtained the unrestricted permission of the copyright owner to grant DSU the rights required by this license, and that such third-party owned material is clearly identified and acknowledged within the text or content of the submission.

IF THE SUBMISSION IS BASED UPON WORK THAT HAS BEEN SPONSORED OR SUPPORTED BY AN AGENCY OR ORGANIZATION OTHER THAN THE CSIR, YOU REPRESENT THAT YOU HAVE FULFILLED ANY RIGHT OF REVIEW OR OTHER OBLIGATIONS REQUIRED BY SUCH CONTRACT OR AGREEMENT.

The CSIR will clearly identify your name(s) as the author(s) or owner(s) of the submission, and will not make any alteration, other than as allowed by this license, to your submission.

description field is used to further acknowledge the copyright owner, by specifying the publisher's details, e.g. "Copyright 2009: IEEE." This allows a user to easily see that the work was done at CSIR, but that copyright was transferred to IEEE. This is important should an end user wish to purchase an original copy.

Conclusion

Effective administration of a repository is of utmost importance if the intent is to grow the repository content reliably. Such a repository is administered by a professional IR practitioner who is an advocate and who communicates the advantages of publishing in an OA repository, while ensuring that researchers understand the issues and concerns regarding copyright. Such a practitioner fully understands that IR content can only be truly reliable and useful if researchers actively participate in the effort to support OA. Active participation is shown by their willingness to submit their work to an IR. At CSIR, the repository has been embraced and is promoted by CSIR Executive group. These Executives now understand that in the 21st Century, it is necessary to embrace alternative publishing models and that even when the organization does so, it is possible to successfully juggle OA and proprietary information so that the strengths of each can work to the organization's advantage.

References

Bothma, T., H. Pienaar, and M. Hammes. 2008. "Towards Open Scholarship at the University of Pretoria." Paper presented at BOBCATSSS 2008: Proving Access to Information for Everyone, Zadar, Croatia. <http://edoc.hu-berlin.de/conferences/bobcats2008/bothma-theo-271/PDF/bothma.pdf>

APPENDIX A – Sample Letter of Consent

CSIR Information Services

PO Box 395 Pretoria 0001 South Africa

Tel: +27 12 841 2023

Fax: +27 086 519 1337

Email: smuswelantoi@csir.co.za

Publisher's Name/ Name of Editor/Name of organisation

Physical Address

Date of when the letter was sent out

RE: Request for permission to archive the article below in the CSIR Open Access Institutional Repository

Articles

Author: *Name of researcher/author*

Title: *Title of Journal article*

Source: *Journal name*

ISSN: *International standard serial number*

Pages: *Page numbers on the article*

Date: *Date of publication*

Copyright owner: *Name of publisher*

The institutional repository is a not-for-profit service for our academic researchers/author/s, providing access to the full-text of their publications. Full bibliographic details are given for each article/book chapter, conference proceeding, etc. The CSIR (Council for Scientific and Industrial Research) encourages all researchers to deposit their publications into the organisation's DSpace Repository CSIR Research Space which has been developed to capture and display the intellectual output of the CSIR. Material in the repository is freely available online for world wide public access.

If possible, it is preferred to archive the finalised PDF version as it appears in print. The PDF version has an advantage over mounting the author's own version, in that it maintains consistency in appearance of the paper wherever it is read. This also maintains a closer association of the article with the Journal/Book or conference proceeding, through the header-title and journal house-style.

We will acknowledge The Publisher as the copyright holder of this publication. And if this publisher is not the copyright holder, please advice. Thank you for giving this request your consideration. I look forward to hearing from you. Please feel free to contact me if you require further clarification.

Kind Regards,

Professional: Institutional Repositories

CSIR Information Services

PO Box 395

Pretoria 0001

South Africa

Tel:

Email

Budapest Open Access Initiative. 2002. <http://www.soros.org/open-access/read.shtml>

Chan, L., and S. Costa. 2005. "Participation in the global knowledge commons: challenges and opportunities for research dissemination in developing countries." *New Library World* 106(3/4): 141–53.

Christian, G. E. 2008. *Issues and challenges to the development of open access institutional repositories in academic and research institutions in Nigeria*. <https://hdl-bnc.idrc.ca/dspace/bitstream/123456789/36986/1/127792.pdf>

Harnad, S., and T. Brody. 2004. "Comparing the impact of open access (OA) vs. non-OA articles in the same journals." *D-Lib Magazine* 10(6). Quoted in L. Chan and S. Costa, "Participation in the global knowledge commons: challenges and opportunities for research dissemination in developing countries," *New Library World* 106(3/4, 2005): 141–53.

Keats, D. 2003. "Collaborative development of open content: A process model to unlock the potential for African universities." *First Monday* 8(2). <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1031/952>

Longe, O. B. 2009. "Intellectual Property Protection in the Age of Open Access and Digital Rights Management—Balancing the Odds." Paper presented at the 2nd African Digital Scholarship and Curation Conference, May 12–14, 2009, Pretoria, South Africa. http://www.library.up.ac.za/digi/docs/longe_paper.pdf

Nicholson, D. 2007. "International copyright trends & access to knowledge (A2K) initiatives in Africa." Presented at the World Library and Information Congress: 73rd IFLA Conference: "Libraries for the Future: Progress, Development and Partnerships," August, 22, 2007, Durban, South Africa. <http://archive.ifla.org/IV/ifla73/papers/135-Nicholson-en.pdf>

Nicholson, D., and T. Thutoetsile. 2007. Introducing the Africa Access to Knowledge Alliance (AAKA). Presentation at the SARUA/AAKA Leadership Summit, November 20–21, 2007, Garborone, Botswana. http://www.sivulile.org/workshops/sarua2007/SARUA%20OA%20Summit%202007_Denise%20Nicolson.pdf

Open Access to Scholarly Information. Publishing agreements. http://open-access.net/de_en/general_information/legal_issues/publishing_agreements/

Peters, D. 2007. Intellectual property management: Institutional Repositories, South Africa. Presentation at Institutional Repositories (IR): a workshop on creating an information infrastructure for the scholarly community, July 17–19, 2007, Johannesburg, South Africa.

Rens, A., A. Prabhala, and D. Kawooya. 2006. *Intellectual Property, Education and Access to Knowledge in Southern Africa*. <http://www.iprsonline.org/unctadictsd/docs/06%2005%2031%20tralac%20amended-pdf.pdf>

Selematsela, D., and H. van der Berg. 2007. NFR advocacy role: The national electronic & thesis dissertation project. Presentation at Institutional Repositories (IR): a workshop on creating an information infrastructure for the scholarly community, July 17–19, 2007, Johannesburg, South Africa. <http://stardata.nrf.ac.za/forms/netdProject.ppt>

Sherpa RoMEO. Publisher copyright policies & self-archiving. <http://www.sherpa.ac.uk/romeo/>

Smit, Carel, and Wessel Van Wyk. 2007. Introduction to copyright in South Africa. <http://www.svw.co.za/copyright.html>

Suber, Peter. 2007. Open Access Overview: focusing on open access to peer-reviewed research articles and their preprints. <http://www.earlham.edu/~peters/fos/overview.htm>

van der Merwe, A. 2008. "Development and implementation of an institutional repository within a Science, Engineering and Technology Environment." Mini-diss., University of Pretoria. <http://upetd.up.ac.za/thesis/available/etd-08282008-090829/unrestricted/dissertation.pdf>

van der Merwe, A., and M. van Heerden. 2008. "Databases, institutional repositories and an organisational work flow." Presented at the South African Online User Group conference, June 2–5, 2008, Pretoria, South Africa. <http://researchspace.csir.co.za/dspace/handle/10204/2295>

Vaver, D. 2000. *Copyright Law*. Essentials of Canadian Law. Irwin Law. Quoted in G. E. Christian, *Issues and challenges to the development of open access institutional repositories in academic and research institutions in Nigeria* (2008), 40, <https://hdl-bnc.idrc.ca/dspace/bitstream/123456789/36986/1/127792.pdf>

Velterop, J. 2006. "The Golden Route to Open Access." *ERCIM News* no. 64. http://www.ercim.eu/publication/Ercim_News/enw64/velterop.html

SIPHETHILE MUSWELANTO is an Institutional Repositories & Digitisation Initiatives Professional, ADELE VAN DER MERWE is Manager of Library and Information Curation and Preservation Services, and MARTIE VAN DEVENTER is Portfolio Manager at CSIR Information Services, Pretoria, South Africa.

Contact Information

Siphethile Muswelanto
Professional: Institutional Repositories & Digitisation Initiatives
CSIR Information Services
P.O. Box 375
Pretoria 0001
SOUTH AFRICA
PH: +27 12 841 2023
E-mail: smuswelanto@csir.co.za

La gestion de la Propriété Intellectuelle et l'Accès Libre aux Résultats de Recherche: Cas du Centre National de Recherche Agronomique (CNRA)

Kédro Sidiki Diomande

EDITOR'S NOTE: This paper was presented at the 2nd Conference of the IAALD Africa Chapter, July 15–17, 2009, Accra, Ghana.

MOTS CLÉ: Institution de recherche, diffusion de l'information, accès à l'information, brevet, droit de propriété intellectuelle

ABSTRACT: The researcher is at once a consumer and a producer of scientific information. Research begins in the technical realm, but its results fall into the realm of intellectual property. One issue that therefore arises is the problem of researchers' rights and duties with regard to the exploitation and production of scientific results.

The National Center of Agronomic Research (CNRA), conscious of the need to protect its research results and of its mission as a public service, set up an intellectual property rights management system in collaboration with its partners. This system ensures open access to research results while at the same time enabling their exploitation for a return on investment.

RÉSUMÉ: Le chercheur est à la fois consommateur et producteur d'informations scientifiques. Toute recherche débute en effet par l'état de la technique. Mais les résultats de recherche sont aujourd'hui l'objet de droit de propriété intellectuelle. Il se pose donc

Introduction

Les centres de recherche et les universités sont les principaux générateurs de connaissances. Celles-ci peuvent être de nouvelles technologies, de nouveaux produits, de nouveaux procédés ou une amélioration de ceux-ci.

En plus d'être générateur de connaissances, le chercheur en est utilisateur. Il est en effet indispensable qu'il ait un large accès aux périodiques scientifiques afin de se tenir à jour des connaissances déjà acquises et d'éviter de dupliquer des travaux antérieurs.

La gestion des résultats de recherche dans les centres de recherche et universités – Traditionnellement, la publication constitue la principale voie de valorisation des résultats de recherche. De plus, la publication dans des revues dites «cotées» est imposée par les modes d'évaluation du chercheur (Baudrier, Gilles, and Poncin, 2003).

De nos jours, les centres de recherche et les universités sont confrontés à l'insuffisance de ressources pour financer la recherche. Une des voies permettant de surmonter cette contrainte et, par la même occasion, de favoriser le retour sur investissement est la valorisation économique des acquis des travaux de recherche à tra-

vers la gestion des actifs de propriété intellectuelle.

Le Centre National de Recherche Agronomique (CNRA), conscient de la nécessité de protéger ses résultats et de sa mission de service public, met en place, en collaboration avec des partenaires, un système de gestion de la propriété intellectuelle. Celui-ci assure un accès libre aux résultats de recherche en même temps que leur exploitation pour un retour sur investissement.

RESUMEN: El investigador es, a la vez, consumidor y generador de información científica. La investigación empieza en el campo técnico, pero sus resultados se extienden al campo de la propiedad intelectual. Por consiguiente, surge el problema de los derechos y las responsabilidades de los investigadores respecto a la producción y uso de los resultados científicos.

El Centro Nacional de Investigación Agrícola (CNRA, en francés), consciente tanto de la necesidad de proteger los resultados de su investigación como de su misión de servicio público, estableció un sistema de manejo de los derechos de propiedad intelectual en unión con sus socios colaboradores. Este sistema garantiza un acceso libre a los resultados de la investigación y, al mismo tiempo, permite su explotación para que la inversión hecha en ellos genere un rendimiento.

vers la gestion des actifs de propriété intellectuelle.

La gestion de la propriété intellectuelle dans les centres de recherche et les universités est généralement fonction du statut juridique de la structure. Néanmoins, les titres de protection des propriétés gardent les mêmes enjeux. En effet, après le dépôt d'une demande de titre de propriété, point n'est besoin de maintenir le résultat secret. De plus, il y a divulgation obligatoire, liée au dépôt de titre, à travers les bulletins d'office de propriété intellectuelle.

Ainsi, les résultats de recherche sortent de leur champ classique de publication dans les revues spécialisées (thématiques), qui ne sont généralement consultées que par les chercheurs de la spécialité.

On constate de plus en plus que le partage des retombées financières des résultats de recherche se fait selon le modèle de la loi de Bayh-Dole (Bouchoux, 2007), qui réserve à l'inventeur une partie du gain généré. C'est le cas prévu dans l'accord de Bangui (1999), qui régit la propriété intellectuelle dans l'espace de l'organisation africaine de la propriété intellectuelle (OAPI), qui attribut le droit moral (droit d'auteur) à l'inventeur et le droit patrimonial à l'employeur (centres de recherche, universités,...).

Quand le chercheur publie ses résultats, il est généralement obligé de céder ses droits d'auteurs aux maisons d'éditions qui l'exigent à travers les contrats de cession de droit font signer avant publication (Guedon, 2008). Notons au passage que généralement la publication dans ces revues est payante et pèse lourdement dans les budgets de recherche. De plus, l'accès est également payant pour les tiers.

Face à cette situation, le Centre national de recherche agronomique (CNRA) tente de trouver une harmonie entre l'accès libre aux connaissances qu'il génère et la gestion des droits de propriété intellectuelle.

Gestion de la Propriété Intellectuelle au CNRA

Le Centre national de recherche agronomique (CNRA), créé en 1998, est une Société Anonyme, donc de gestion privée; les parts sociales de la société appartiennent pour 40 % à l'Etat de Côte d'Ivoire et pour 60 % à d'autres structures de la place (agro-industrie, société savante, assurances). Il exerce pour l'Etat, un service public de recherche.

Une de ses principales missions est le transfert aux utilisateurs de ses résultats de recherche. Vu la spécificité de cette structure, qui constitue un cas unique en Afrique, le CNRA tente de concilier la gestion de propriété intellectuelle et l'accès à ses résultats de recherche.

La gestion de la propriété intellectuelle du CNRA est confiée à la direction des Innovations et des Systèmes d'information (DISI) qui a pour missions:

- le recensement des innovations existantes et leur valorisation adéquate à travers les outils de protection;
- la sensibilisation et la formation du personnel, en matière de propriété intellectuelle.

Le service, créé depuis 2002, est appuyé par un cabinet-conseil juridique qui s'occupe de gérer les contentieux et d'analyser les conventions et documents de partenariat avec tiers.

Le CNRA dispose d'une charte de propriété intellectuelle. Le volet publication des résultats de recherche est géré à travers une commission technique de publication, constituée de chercheurs-seniors, qui a comme secrétaire le responsable de la gestion de la propriété intellectuelle.

Le rôle principal de ce comité est de recevoir toutes les publications soumises par les chercheurs et de réguler leur diffusion selon l'intérêt de la découverte. Ce comité ordonne le paiement des frais de publication et contrôle les cessions de droit aux maisons d'édition.

Notons que le CNRA effectue ainsi l'archivage institutionnel des publications soumises par ses chercheurs. Cet archivage est facilité par la double mission de gestion du système d'information et de la propriété intellectuelle dévolue à cette direction.

Accès aux Résultats de Recherche au CNRA

L'état fait obligation au CNRA de transférer ses résultats de recherche aux utilisateurs afin de promouvoir l'agriculture et ainsi contribuer à la réduction de la pauvreté.

Mais, comment assurer un large accès à ses résultats et aussi permettre à ses chercheurs d'accéder aux informations scientifiques nécessaires dans leurs activités de recherche?

Le CNRA dispose de 14 unités de documentation réparties sur l'ensemble du territoire ivoirien. La documentation est constituée de 12 000 titres de monographies dont 1227 titres produits en interne et 642 publications scientifiques de résultats de recherche.

L'ensemble de ces titres est référencé dans une base de données accessible en recherche bibliographique interne. L'interconnexion entre les sites du CNRA n'étant pas encore effective, cette base de données est dupliquée dans toutes les unités de documentation. Signalons que seule une infime partie des titres est actuellement consultable en plein texte.

L'accès des chercheurs aux publications extérieures au CNRA se fait principalement à travers le Système de recherche mondiale en ligne sur l'agriculture (AGORA). Ce système, mis en place par l'Organisation des Nations Unies pour l'alimentation et l'agriculture (FAO) et par de grands éditeurs, permet aux pays en développement d'accéder en ligne à une importante collection de 1278 revues dans les domaines tels que l'alimentation, l'agriculture, la science environnementale et les sciences sociales apparées.

Dans le but d'améliorer l'accès aux informations au CNRA, plusieurs actions sont menées:

- le Service Question/Réponse qui met à la disposition du public une adresse électronique et des contacts téléphoniques permettant à tout usager de requérir des informations. A cet effet, des dossiers documentaires sont constitués et utilisés pour répondre aux requérants.
- Le site internet (<http://www.cnra.ci/>) qui donne accès aux informations sur les acquis et résultats de recherche
- Le renforcement du système informatique qui permettra la création d'une plateforme mettant à la disposition de tout usager des données du CNRA et d'autres structures du domaine de la recherche et du développement en Côte d'Ivoire; celui-ci sera réalisé dans le cadre du Projet Système Régional d'Information et d'Apprentissage Agricoles (RAILS) initié par le FARA.

Cependant, la mise en oeuvre de l'ouverture électronique du CNRA au public nécessite de gros investissements financiers, en particulier pour assurer une sécurité informatique adéquate et un archivage électronique des documents. La sécurisation du système informatique du CNRA est évaluée à 170 000 U\$.

Face à cette contrainte et vu l'insuffisance des budgets alloués, nous préconisons une mutualisation des ressources informatiques des instituts de recherche et universités au niveau national ou régional par le partage de plateforme ou la création de centre d'archivage national ou régional.

Conclusion

Le centre national de recherche agronomique (CNRA), conscient de sa mission de service public, s'efforce à donner au public un libre accès à ses résultats de recherche et de faciliter l'accès de ses chercheurs aux informations scientifiques. Cette délicate tâche est confiée à la direction des innovations et des systèmes d'information (DISI) qui gère les actifs de propriété intellectuelle.

Dans cette optique, plusieurs actions ont été initiées:

- la mise en place d'une commission technique de publication, qui gère le volet droit d'auteur au CNRA. Ce mode de gestion des publications permet un archivage des publications;
- L'ouverture du service d'information à la demande, «Question/réponse» en collaboration avec le centre technique de coopération agricole et rurale (CTA);
- La création du site internet (<http://www.cnra.ci/>);
- Le renforcement du système informatique d'accès à distance dans le cadre du projet RAILS;
- L'accès à la base de données AGORA en collaboration avec la FAO.

Ce modèle de gestion de la propriété intellectuelle et de l'accès libre à l'information du CNRA, qui mérite certainement une amélioration, pourrait servir d'exemple à d'autres instituts de recherche et universités en Afrique.

Bibliographie

Accord portant révision de l'accord de du 02 mars 1977 Bangui instituant une organisation africaine de la propriété intellectuelle. 1999. Douala: Les Grandes Editions. <http://www.oapi.wipo.net>

Baudrier, Liliane, Benjamin Gilles, Ollivier Poncin. 2003. Le chercheur, l'enseignant et l'étudiant face au droit d'auteur. Villeurbanne: Mémoire de Recherche, Enssib. <http://www.par-tage-des-savoirs.info/projet/Bibliographie>

Bouchoux, Deborah E.. 2007. La propriété intellectuelle. Paris: Nouveaux Horizons.

Guedon, Jean-Claude. 2008. «Repenser le sens de la communication scientifique: l'accès libre». MS. Médecine sciences 24(6-7): 641-5. <http://cat.inist.fr/?aModele=afficheN&cpsidt=20493242>

DR. KÉDRO SIDIKI DIOMANDE est Directeur des Innovations et des Systèmes d'Information/ Chargé de la Propriété Intellectuelle, Centre National de Recherche Agronomique (CNRA), Abidjan, Côte d'Ivoire.

Contact Information:

Dr. Kédro Sidiki Diomande
Directeur des Innovations et des Systèmes
d'Information/ Chargé de la Propriété Intellectuelle
Centre National de Recherche Agronomique (CNRA)
BP 1740 Abidjan 01
COTE d'IVOIRE
E-mail: kedro.diomande@cnra.ci

Gestion et Diffusion de l'Information Scientifique et Technique dans les Institutions de Recherche Agricole et Agroalimentaire du Sénégal: les Acquis Majeurs Obtenus dans le Cadre du Projet FAC/IST

Massamba Cisse

EDITOR'S NOTE: This paper was presented at the 2nd Conference of the IAALD Africa Chapter, July 15–17, 2009, Accra, Ghana.

MOTS-CLEFS: Soutien de la recherche, Coopération Internationale, Système d'information, Traitement de l'information, Diffusion de l'information, Evaluation de projet, Institution de recherche, Sénégal.

ABSTRACT: This paper focuses on the activities conducted within the framework of a project entitled "Support to the Senegalese scientific and technical information and communication systems". This project was financed by the French Cooperation to support the upgrading of the scientific and technical information structures of the agricultural and food processing research institutions of the country. This paper traces the evolution of the project and highlights the lessons learned in terms of management and dissemination of Scientific and Technical Information (STI) within the National Agricultural and Food Processing Research System (SNRAA). Following a brief history of agricultural research in Senegal, the principal components of SNRAA are presented. The different phases of the project are then described to highlight the knowledge and experiences that were gained from it.

RÉSUMÉ: Ce document fait le point des activités menées dans le cadre du projet « Appui aux systèmes d'information et de communication scientifique sénégalais ». Celui-ci a été financé par la Coopération française qui a souhaité contribuer à la remise à

niveau des structures d'information scientifique et technique des institutions de recherche agricole et agroalimentaire du pays. La communication retrace l'évolution du projet et met en exergue les acquis en termes de gestion et diffusion de l'Information Scientifique et Technique (IST) au sein du Système National de Recherche Agricole et Agroalimentaire (SNRAA). Après un bref historique de la recherche agricole au Sénégal, le SNRAA est présenté à travers ses principales composantes. Les différentes phases de l'exécution du projet sont ensuite tour à tour décrites pour pouvoir mettre en relief les divers acquis à l'issue de ce projet.

RESUMEN: Este artículo se centra en las actividades realizadas dentro del marco de un proyecto denominado 'Apoyo a los sistemas senegaleses de información y comunicación de carácter científico y técnico'. La Cooperación Francesa financió este proyecto para apoyar la modernización de las estructuras de información científica y técnica de las instituciones agrícolas y de investigación en procesamiento de alimentos en el país. Este artículo registra la evolución del proyecto y destaca las lecciones aprendidas en relación con el manejo y la difusión de la información científica y técnica dentro del Sistema Nacional de Investigación Agrícola y de Procesamiento de Alimentos (SNRAA, en inglés). Después de un recuento breve de la investigación agrícola en Senegal, se presentan los componentes principales del SNRAA. Se describen luego las diferentes fases del proyecto para destacar los conocimientos y las experiencias derivadas de él.

Introduction

Au Sénégal, les activités liées à l'IST ont commencé pendant la période coloniale, avec le démarrage des activités dans le domaine de la recherche agricole. En effet, la production scientifique émanant des activités de recherche était constituée de rapports techniques et autres types de publications. Les différentes structures existantes à l'époque étaient gérées par les institutions de recherche de la Métropole: Centre de recherches agronomiques (CRA) de Bambey, Laboratoire central d'élevage (LCE), Centre d'études techniques et scientifiques des pêches maritimes (CETSPM). Ces structures abritaient déjà de petites bibliothèques spécialisées ou des dépôts d'archives.

Au lendemain des indépendances, les structures nationales de recherche comme l'Institut Sénégalais de Recherches Agricoles (ISRA) ont hérité de ces fonds documentaires. Cette « mémoire scientifique » à laquelle s'ajoutaient

leurs propres productions scientifiques était à réorganiser et à rationaliser pour en faire un outil indispensable à une recherche efficace et valorisante. Des initiatives sont prises pour concevoir et développer des services d'information documentaires fonctionnels capables de prendre en charge la gestion de l'IST. Toutefois, face à une conjoncture économique souvent difficile, ce secteur a connu une léthargie patente au niveau des institutions nationales de recherche. C'est dans ce cadre que certains projets ont été ficelés dans l'optique de dynamiser le secteur. C'est le cas du projet intitulé « Appui aux systèmes d'information et de communication scientifique sénégalais » communément appelé Projet Fac/IST.

Ce projet a été élaboré par l'ISRA, l'Institut de technologie alimentaire (ITA), le Centre d'Etude Régional pour l'Amélioration de l'Adaptation à la Sécheresse (CERAAS), le Centre de coopération internationale en recherche agro-nomique pour le développement (CIRAD) et l'Institut

de recherche pour le développement (IRD) en 1999 pour une durée de 3 ans.

Aujourd'hui que le Projet a vécu, nous avons souhaité mesurer son impact sur le flux de l'IST dans le SNRAA. Le document est structuré en trois parties. Dans la première partie, nous faisons un bref historique de la recherche agricole et agroalimentaire au Sénégal avant de présenter le SNRAA du pays. Dans la deuxième partie, nous passons en revue le déroulement du projet en ce qui concerne le volet « Appui documentaire et traitement de l'information » pour enfin mettre en lumière les importants acquis obtenus en mettant en relief la capitalisation, la diffusion et le partage de l'IST à travers le SNRAA.

Bref Historique de la Recherche Agricole et Agroalimentaire au Sénégal

La recherche agricole a débuté au Sénégal dès la création, en 1921, de la station expérimentale de Bambey chargée d'effectuer des recherches sur l'amélioration variétale et la culture de l'arachide. Elle s'est ensuite diversifiée en englobant les volets vétérinaires et océanographiques. La recherche vétérinaire visait surtout à maîtriser les grandes maladies infectieuses. En ce qui concerne l'océanographie, c'est l'Institut Français d'Afrique Noire (IFAN) créé en 1936, qui s'y impliquait en même temps que l'Office de la Recherche Scientifique Coloniale (ORSC), créé en 1943 et actuelle IRD. Au lendemain de la deuxième guerre mondiale (1939-1945), la recherche agricole prit une dimension régionale et englobait toute l'Afrique Occidentale Française (AOF).

En ce qui concerne la recherche agroalimentaire, elle s'effectuait avant les indépendances dans les grandes entreprises et les centres de recherche métropolitains. Elle était orientée vers les produits halieutiques, les produits agricoles et les produits d'élevage.

A l'avènement de l'indépendance en 1960, le Sénégal hérite des structures de recherches existantes sur son territoire, mais la gestion et la conduite de la recherche sont toujours confiées à la France. Ce n'est qu'à partir de 1974 qu'une nationalisation du secteur de la recherche agricole et agroalimentaire a été amorcée, avec la création par les pouvoirs publics d'instances étatiques de coordination de la recherche scientifique et technique.

Aujourd'hui la recherche agricole et agroalimentaire au Sénégal est conduite par un ensemble de structures étatiques, privées ou étrangères constituant de fait le SNRAA. Celui-ci découle de l'impérieuse nécessité de mettre en place un mécanisme de coordination et de planification, un système d'échange fluide et systématique d'informations, et un mécanisme de répartition des activités de recherche et d'allocation des ressources.

Le SNRAA

Il est composé des principaux opérateurs de recherche évoluant dans le domaine agricole, agroalimen-

taire, de l'enseignement supérieur et de la formation professionnelle.

L'ISRA – L'ISRA a été créée en 1974 par la fusion des centres de recherche hérités de la période coloniale en un seul institut national de recherches agricoles chargé de concevoir, d'organiser et de mener à bien toutes les recherches relatives au secteur agricole au Sénégal. Ses activités couvrent tous les domaines du secteur agricole : productions végétales, animales, forestières, halieutiques et la socio économie rurale. L'ISRA a pour mission de générer des connaissances et des technologies appropriées pour atteindre l'objectif de sécurité alimentaire des populations, de création d'emplois et de richesses et partant le développement économique, social, scientifique et culturel du pays.

L'ITA – L'ITA est un établissement public œuvrant dans le secteur de la Recherche-Développement en alimentation et nutrition. Il a été créé en 1963 et a, entre autres missions, de guider et de coordonner les recherches et les études concernant le traitement, la transformation, le conditionnement, la conservation et l'utilisation des produits alimentaires locaux, principalement dans le but de promouvoir l'implantation d'industries correspondantes.

Le Centre de Suivi Ecologique – Le Centre de suivi écologique (CSE) est une association à vocation d'intérêt publique, placée sous la tutelle du ministère de l'environnement. Il a pour mission la collecte, la saisie, le traitement et la diffusion des données et des informations sur le territoire, sur les ressources naturelles, en utilisant les technologies spatiales, en vue de jeter les bases d'une gestion durable des ressources.

Le Centre de formation et de recyclage forestier de Thiès – Cette institution est un démembrement de la Direction des Eaux et Forêts qui vise au renforcement des capacités opérationnelles des ressources humaines chargées du développement rural en général et forestier en particulier.

Le CERAAS – Le CERAAS est le résultat de l'engagement de l'ISRA et des autres instituts de recherche des pays membres du *Conseil ouest et centre africain pour la recherche et le développement agricole* (CORAF) et de leurs partenaires bilatéraux, pour répondre aux enjeux de l'amélioration de la production agricole en conditions de sécheresse. En 1989, le centre a été officiellement créé en tant que *laboratoire national à vocation régionale* spécialisé dans les recherches sur l'amélioration de l'adaptation à la sécheresse pour les équipes de la zone CORAF.

L'IRD – L'IRD (anciennement ORSTOM) est un établissement français public à caractère scientifique et technique placé sous la tutelle des ministres chargés de la recherche et de la coopération. Il a pour mission de développer des projets scientifiques centrés sur les relations entre l'homme et son environnement dans la zone intertropicale.

Le CIRAD – Le CIRAD est un établissement public scientifique spécialisé en agriculture des régions tropicales

et subtropicales. Sa mission est de contribuer au développement de ces régions par des recherches, des réalisations expérimentales, la formation, l'information scientifique et technique. Présent au Sénégal avec une équipe de 20 chercheurs, le centre pilote deux pôles de compétence dans le cadre de ce partenariat : la gestion des ressources naturelles en zone sèche et l'adaptation des productions végétales à la sécheresse.

Les institutions académiques d'enseignement et de formation – Les différents départements ou instituts d'enseignement et de formation à caractère agricole des Universités (Cheikh Anta de Dakar, Gaston Berger de Saint-Louis, Université de Thiès) et d'autres écoles de formation agricole, sont membres du SNRAA.

Les parties prenantes – Elles constituent des groupes susceptibles d'influer sur les activités de recherche, et inversement d'être affectés par les résultats de la recherche (les structures étatiques et les bailleurs de fonds, organismes régionaux/internationaux, ONG, entreprises, unités industrielles à vocation agricole, organisations de producteurs, associations de consommateurs).

La Relance de l'IST au Niveau du SNRAA : le Projet FAC/IST

Contexte et justifications – Déjà au sortir des années d'indépendances, des initiatives ont été prises pour développer l'IST au niveau du secteur agricole en particulier et au niveau national en général. Le Centre de Documentation Scientifique et Technique a été le principal opérateur de la politique nationale d'information. Avec l'appui de la coopération internationale, il a co-piloté plusieurs réseaux tels le Réseau National d'Information Scientifique et Technique (RNIST), le Réseau d'Information et de Documentation de l'Enseignement Supérieur (RIDES), AGRIS, etc. Ces systèmes ont permis la capitalisation et l'échange de l'IST à travers moult produits documentaires : répertoire des thèses et mémoires de l'enseignement supérieur, bibliographie analytique sur le développement économique et social du Sénégal, répertoire des organismes de documentation et d'information scientifiques et techniques, répertoire des sources d'information sur l'environnement Sénégal, etc.

Cependant la conjoncture difficile et la crise économique n'ont pas épargné un secteur comme l'IST. Les effets négatifs se font sentir à divers niveaux :

- Au niveau des infrastructures et des ressources physiques :
 - Les locaux n'ont pas suivi le rythme de croissance des fonds documentaires et sont souvent vétustes et inadaptés ;
 - Les équipements et autres matériels (ordinateurs, photocopieurs, etc.) sont quasi inexistantes ou s'ils existent, sont obsolètes et ne bénéficient d'aucune maintenance.
 - Les ressources documentaires ne se renouvellent pas

faute de budget consacré aux acquisitions, ce qui réduit la pertinence des fonds et compromet la satisfaction des besoins des utilisateurs.

- Au niveau des ressources humaines :
 - On assiste à une érosion de ces ressources car les postes vacants (pour cause de départs à la retraite, décès, etc.) ne sont pas pourvus ;
 - Le manque de formation et de valorisation du personnel a conduit à une situation de sclérose des ressources humaines.
- Au niveau des ressources financières
 - Les budgets alloués à l'IST sont faibles et sont mobilisés difficilement.
- Au niveau de la gestion de l'IST
 - Les outils de travail obsolètes et ne permettent pas un travail documentaire efficace ;
 - Il existe un retard manifeste par rapport au développement des nouvelles technologies de l'information.

C'est pour remédier à cette situation que lors de la mise en place du SNRAA en 1997, l'IST a été un des axes prioritaires de réflexion. Au sortir des travaux, l'ISRA, l'ITA, le CIRAD et l'IRD ont formulé un projet commun visant à renforcer et à améliorer les systèmes d'information et de communication scientifique pour les adapter aux besoins nationaux et leur donner ultérieurement la possibilité de jouer un rôle au niveau régional.

C'est dans ce contexte qu'une convention de financement a été signée en février 1999, entre les Gouvernements du Sénégal et de la France pour la mise en place du Projet intitulé « Appui aux systèmes d'information et de communication de la recherche agricole et agroalimentaire au Sénégal » communément appelé projet FAC/IST.

Composantes du Projet – Le Projet comprend 2 composantes, l'une axée sur la réhabilitation des structures IST, et l'autre sur la production du bilan de la recherche agricole et agroalimentaire.

La réhabilitation des structures IST – Il comporte les volets suivants :

- *Réaménagement et équipement des locaux* : Les locaux exigus sont à réhabiliter de façon à permettre un fonctionnement normal des services d'information ; l'équipement sera composé de rayonnages fixes, de présentoirs, de tables de consultation et de chaises, de matériel informatique (station PAO destinée à la production éditoriale, postes de travail, scanner et ordinateur portable pour la numérisation, serveur de réseau local) et du matériel de reprographie (photocopieurs et duplicateurs)
- *Renforcement des capacités des ressources humaines* : Ce volet prévoit d'impliquer les professionnels IST dans des séjours d'études de 3 semaines (2 par année) sur les trois années du projet ; ils bénéficieront d'une mise à niveau axée sur l'analyse et la maîtrise de fonctions bien déterminées : réalisation de catalogues, administration de bases de données, conception de page Html, etc.
- *Appui documentaire aux équipes scientifiques* : Il s'agit

d'améliorer l'accès des chercheurs à une information actuelle et personnalisée contenue dans les revues scientifiques et autres bases et banques de données internationales.

- *Constitution d'un pôle de bases de données documentaires*: L'ISRA, l'ITA et le CERAAS ne disposent pas de catalogues de base indispensables au bon fonctionnement de toute structure d'information. Il est donc impossible de savoir «*qui détient quoi et où ?*» en interne et entre institution voisine. Ainsi ce volet vise à produire les catalogues des publications, des ouvrages et des revues de chaque institution.
- *Sauvegarde du patrimoine scientifique*: C'est l'étape de la numérisation qui complète le volet production de catalogues. Elle permettra de sauvegarder en texte intégral les publications des institutions depuis leur origine.

Le bilan de la recherche – A l'issue de l'exécution de la première composante, les responsables du projet engageront les équipes scientifiques à dresser le bilan de la recherche agricole et agroalimentaire sénégalaise. Un tel bilan sera imprimé, mais une version multimédia sera réalisée afin d'assurer sa diffusion sur CD-ROM et sur le Web.

Déroulement du Projet

L'évaluation et le suivi du projet sont assurés par un Comité de pilotage (CP) qui réunit l'ensemble des partenaires associés au projet (ISRA, ITA, IRD, la Mission de Coopération et d'Action Culturelle de l'ambassade de France). Il existe également un chef de projet qui établit les programmes et rapports d'activités du Projet. Le CIRAD et l'IRD interviennent sous forme de missions de suivi et d'appui technique.

Dans la description du déroulement du projet, seules les activités relatives au traitement et à la gestion de l'IST seront rapportées à savoir: *l'appui documentaire aux équipes scientifiques, la constitution d'un pôle de bases de données documentaires et la sauvegarde du patrimoine scientifique*. Ces activités ont été menées par les professionnels IST de l'UNIVAL, une structure transversale de l'ISRA chargée de la valorisation, de l'édition et de la coordination des activités documentaires.

Appui documentaire aux équipes scientifiques – A l'effet d'évaluer les besoins documentaires des chercheurs des différents instituts et laboratoires du SNRAA, un expert du CIRAD a séjourné au Sénégal du 14 au 26 novembre 1999. Dans le cadre de cette mission d'appui, il a fait une analyse systématique des besoins en recueillant 446 demandes. Les demandes étaient ainsi catégorisées:

- Abonnements à des revues
- Commandes d'ouvrages
- Demandes de cd-rom ou de Current Contents ON Diskette (CCOD)
- Abonnements DSI
- Autres (documents factuels, texte intégral, etc.)

TABLEAU 1 – volume de documents triés dans les centres de recherche

CRODT	5-7 avril 2000	681
CNRA Bambey	10-14 avril 2000	2616
CDH	17-18 avril 2000	189
CRZ Kolda	24-29 avril 2000	52
LNERV	2-5 mai 2000	3102
CRA Saint-Louis	8-10 mai 2000	334

L'expert a budgétisé l'ensemble des demandes, puis a élaboré une base de données qui en donne le détail par institut, produit d'information demandé, type d'acquisition, etc.

Constitution d'un pôle de bases de données documentaires – Ce volet vise le référencement systématique des collections documentaires dans des bases de données sur la production scientifique, les ouvrages et les périodiques et l'édition des trois catalogues correspondants. C'est dans ce cadre qu'un second expert du CIRAD a effectué une mission d'appui au Sénégal du 22 novembre au 10 décembre 1999 pour mettre en place un programme de travail et élaborer un budget prévisionnel pour la réalisation de ce volet.

Après avoir fait un état des lieux pour évaluer les collections existantes, celui-ci, de concert avec les professionnels IST de l'UNIVAL, a proposé un chronogramme en vue du référencement:

- Tri des documents
- Traitement des documents (catalogage et indexation)
- Saisie et correction des références

Tri des documents – Les opérations de tri (Tableau 1) ont permis de faire un inventaire topographique de toutes les collections documentaires; elles ont porté sur 3 types de documents au niveau des fonds:

- La littérature produite: les documents produits et écrits par les centres de recherche;
- Les périodiques: les publications en série reçues ou détenues
- Les acquisitions: tous les ouvrages et autres documents non produits par les centres de recherche

Certains centres n'ont pas fait l'objet de mission de tri, car leurs fonds sont très bien structurés et bien classifiés; c'est le cas du CERAAS, de l'ITA et du CNRF. Les opérations de tri ont permis en définitive d'isoler la littérature produite qui devait être traitée en premier lieu.

Traitement des documents (catalogage et indexation) – Deux formats de description ont été définis pour les ouvrages et pour les revues à partir du format Forum du CIRAD. Les bordereaux de saisie ont été ensuite conçus et dessinés. Pour que ce travail soit bien mené, les documentalistes impliqués dans le projet ont été formés à l'utilisation de ce format et aux techniques de gestion des bases de données.

Des missions spécifiques ont été menées pour le traitement des documents (CRA Saint-Louis du 31 juillet au 2 août 2000, CERAAS 13 octobre 2000). Pour certains centres, le traitement a suivi aussitôt après le tri car le fonds documentaire n'était pas important quantitativement (CDH, CRZ Kolda). Le tableau ci-dessous (Tableau 2) donne l'ensemble des missions effectuées dans le cadre du référencement des documents et les types de documents objets de cette opération.

Saisie et correction des références – La saisie a été centralisée à l'UNIVAL sauf pour le CNRA où une opératrice a été recrutée sur place. Des bases de données sont conçues pour chaque centre sous le logiciel documentaire Winisis. Au fur et à mesure de l'entrée des données, des listes informatisées des saisies sont régulièrement éditées pour vérifier la cohérence, effectuer les corrections et éliminer les doubles dans le même temps. Pour le CNRA, une mission a été effectuée du 30 avril au 03 mai 2001 pour évaluer le travail de saisie de l'opératrice.

Sauvegarde du patrimoine scientifique – Le personnel de l'UNIVAL a été initié aux techniques de numérisation par un expert de l'IRD. Les opérations de sauvegarde ont ensuite démarré dans toutes les structures du SNRAA et ont naturellement porté sur la littérature produite en interne.

TABLEAU 2 – missions effectuées dans le cadre du référencement des documents

CDH, 17–18 avril 2000 Tri puis traitement des publications
CRZ Kolda, 24–29 avril 2000 Tri puis traitement des publications et des revues
CRA Saint-Louis, 08–10 mai 2000 Tri et traitement des publications
CRA Saint-Louis, 31 juillet–2 août 2000 Traitement des publications
CRA Saint-Louis, 11–12 octobre 2000 Correction du travail des stagiaires
CERAAS, 13 octobre 2000 Migration de données vers Winisis
CNRA Bambey, 13–17 novembre 2000 Traitement des revues
CRA Saint-Louis, 20–22 novembre 2000 Traitement des acquisitions
CERAAS, 13 février 2001 Migration des données vers Winisis, achèvement des opérations
CRA Saint-Louis, 04–08 avril 2001 Traitement des revues

Acquis Majeurs du Projet

Après l'exécution de la première composante du Projet FAC/IST axée sur la réhabilitation des services IST du SNRAA, des acquis certains peuvent être notés à la lumière des réalisations des différents volets du projet:

Meilleur accès à l'IST – L'étude des besoins d'information des chercheurs du SNRAA a permis de définir d'une manière précise leur profil documentaire en vue d'une fourniture personnalisée de l'information. Un ensemble de services et de produits d'information a été mis à la disposition des équipes scientifiques:

- **Sommaires des revues scientifiques:** Ces produits permettent aux chercheurs d'être informés d'une manière constante sur le contenu des revues scientifiques couvrant leur thème de recherche.
- **Cab-abstracts:** C'est une base de données sur cd-rom couvrant tous les aspects liés à l'agriculture et aux domaines associés. Elle constitue le référentiel de base pour le SNRAA.
- **ASFA (Acquatic Sciences and Fisheries Abstracts):** C'est un outil précieux dans le domaine des sciences de l'eau. Cette base de données signale, en effet, les études sur tous les aspects scientifiques et technologiques sur l'eau et les organismes aquatiques.
- **Currents contents on Diskette:** Ils contiennent les sommaires et les résumés d'une sélection des principales revues scientifiques. Les mises à jour sont hebdomadaires. Elles constituent une approche complémentaire aux Cab-abstracts et permettent un suivi rapide de la littérature scientifique.
- **Ouvrages:** Ils constituent une documentation de base qui renforce la pertinence des fonds documentaires.
- **Les produits DSI (Diffusion Sélective de l'Information):** Ils permettent sur un sujet donné de se tenir régulièrement informé de l'information référencée dans les bases de données internationales et, donc d'avoir accès sélectivement à un grand nombre de bases sans faire l'acquisition de la totalité du référentiel.
- **Le TEEAL (The Essential Electronic Agricultural Library):** Ce produit sur cd-rom est une véritable bibliothèque électronique en agronomie qui recense 170 revues scientifiques avec un accès au texte intégral des articles.

Le tableau ci-dessous (Tableau 3) donne une situation des différents produits et services d'information et leur dispatching en fonction des structures.

L'UNIVAL gère l'exploitation et la diffusion de ces différents produits de concert avec les services d'information documentaire (SID) établis au niveau des structures concernées par le Projet. Ainsi les bulletins de sommaires et les DSI sont systématiquement transmis à ces services qui les rendent disponibles pour les utilisateurs. Ainsi pour les DSI, l'UNIVAL a procédé à la diffusion de 983 tirés à part aux chercheurs. D'autres produits d'information comme le TEAAL ou les Cab-Abstracts sont consultables au niveau de l'Unité mais bien signalés au niveau des SID du SNRA.

TABLEAU 3 – produits et services d'information fournis aux chercheurs du SNRAA

	Sommaire des revues	Ouvrages	Cd-rom	Currents Contents	DSI
BAME	3	—	—	—	—
LNERV	25	—	—	—	—
LNRPV	12	—	—	—	—
CDH	43	—	—	—	—
CNRF	23	1	—	1 (ABES)	—
CRA St-Louis	23	1	—	—	6
CNRA	71	5	—	—	—
CERAAS	11	10	—	—	—
CRODT	3	1	1 (ASFA)	—	—
CRZ Kolda	14	—	—	—	6
ITA	15	3	—	—	5
UNIVAL	—	—	1 (CAB)	—	—

NB: Les chiffres relatifs au sommaire des revues et des DSI correspondent respectivement au nombre de revues dont les sommaires seront photocopiés et au nombre de profils définis en vue d'une fourniture des références bibliographiques correspondantes

Capitalisation renforcée de l'information – Les structures de recherche disposent de gisements importants d'informations, liés à leur production scientifique. Le projet a permis de les capitaliser sous forme de base de données et sous forme de fichiers numérisés. Cette sauvegarde du patrimoine scientifique a facilité l'édition de catalogues de publications et le pressage de Cd-rom des publications numérisées.

Conception de bases de données documentaires – Le référencement des collections a permis la conception et l'alimentation des bases de données suivantes:

CDH	189 références
CERAAS	2 427 références
CNRA	3 196 références
CRODT	1 756 références
CNRF	587 références
ITA	294 références
CRZ Kolda	56 références
LNERV	3 054 références
CRA Saint-Louis	1 200 références

Ces différentes bases fonctionnant sous Cds-Isis sont installées au niveau des SID partenaires et permettent aux utilisateurs de faire des recherches rapides et fiables

ou d'élaborer des listes thématiques. L'UNIVAL les a compilées pour générer trois catalogues de publications pour l'ISRA (8 128 références), pour l'ITA (292 références) et pour le CERAAS (252 références). Chaque produit répertorie la référence bibliographique, avec des index auteur, matière et géographique. Chaque catalogue a été tiré en 50 exemplaires dont une liste de diffusion incluait les différents départements ministériels et services nationaux, les décideurs, les partenaires et autres parties prenantes du projet.

Il faut aussi noter qu'une base de données sur les publications en séries a été également créée et comporte 1 247 références. Les acquisitions également ont été référencées à hauteur de 30% car la priorité a été accordée au traitement de la production scientifique.

Conception d'une bibliothèque numérique – Concernant le volet numérisation, des missions ont été effectuées dans les différentes structures de recherche dans le but de digitaliser les publications déjà triées et isolées. Le tableau ci-dessous (Tableau 4) donne la situation du travail effectué.

Cette collection a été retravaillée avec le logiciel Greenstone pour produire une bibliothèque électronique qui est aussi bien visible en local que sur Internet. Au niveau local, la collection est exploitable à l'UNIVAL et dans les SID partenaires. Sur le net, elle est visible à: <http://www.sist.sn/cgi-bin/library?site=localhost&a=p&p=about&c=publi&l=fr&w=utf-8>

Ce site héberge la plateforme Sénégal du SIST (Système d'Information Scientifique et Technique), un autre projet auquel participent les différentes institutions du SNRAA.

Cette étape de la numérisation des ressources a nettement fragilisé la 'barrière physique' à l'information. Le chercheur d'où il se trouve a facilement accès à la ressource. Si l'on prend l'exemple de l'ISRA dont les équipes scientifiques sont 'éparpillées' sur le territoire national, un chercheur du CRZ de Kolda peut se procurer une ressource disponible au LNERV distant de presque 600

TABLEAU 4 – situation des travaux de numérisation dans les différents centres de recherche

CENTRES	Nombre de publications	Nombre de pages
UNIVAL	183	15 316
LNERV	1 626	28 068
CRZ Kolda	52	1 251
CDH	180	7 585
CNRF	433	15 925
CRODT	613	29 817
CRA/Saint-Louis	225	6 671
ITA	300	13 071
CERAAS	231	7 608
CNRA - Bambey	2 063	65 569
TOTAL	5 906	190 881

kilomètres. Un autre peut télécharger au niveau de son SID un document dont il veut une copie.

Meilleure diffusion de l'IST et décloisonnement des services IST – La sauvegarde du patrimoine scientifique sous forme référentielle et numérique a permis une meilleure diffusion de l'IST. Les fonds documentaires étant diversifiés et dûment indexés, les professionnels de l'information maîtrisent parfaitement leurs collections documentaires. Les supports de diffusion sont variés, allant des bulletins de sommaires aux référentiels bibliographiques (bases de données en local, cd-rom, etc.)

Ainsi, les demandes d'information deviennent de plus en plus « solvables » avec des résultats disponibles sous diverses formes (document physique ou forme digitalisée). Aujourd'hui, l'utilisateur voit sa demande d'information satisfaite par la fourniture de bibliographies thématiques à partir des bases de données locales, en ligne (tel Agora du CTA) ou sur CD comme le TEEAL, ou par la mise à disposition même du texte intégral à partir de la bibliothèque électronique en ligne.

Un autre acquis de taille est qu'au sortir du projet FAC/IST, on constate un décloisonnement effectif des structures du SNRAA en matière de partage et d'échange des ressources IST. En effet, maintenant on connaît qui détient quoi aussi bien au niveau des différents démembrements d'une institution, qu'entre institutions. Les ressources IST sont systématiquement référencées sous forme de bases de données ou de catalogues qui indiquent explicitement l'endroit où elles sont conservées. Cette proximité de l'IST est un facteur important de la diffusion et de la valorisation des potentialités de la recherche.

Conclusion

Les institutions composant le SNRAA ont pour mission essentielle de générer des connaissances et technologies en vue du développement économique, scientifique, social du pays. Le Projet FAC/IST a favorisé un meilleur accès et une meilleure diffusion de ces connaissances et technologies. La réhabilitation des services de gestion de l'IST et la sauvegarde numérique de la production scientifique sont des acquis remarquables qui ont favorisé une mutualisation renforcée des ressources informationnelles au niveau du SNRAA. Cette mutualisation devient de plus en plus une réalité car au moment où le Projet FAC/IST finissait, le Projet SIST se mettait en place, proposant un outil de communication et un espace d'échanges entre les acteurs de la recherche dans 9 pays d'Afrique. Les institutions du SNRAA, grâce aux acquis du Projet FAC/IST, constituent des acteurs incontournables du dispositif du SIST dont elles sont les principaux fournisseurs IST.

Remerciements

Le personnel de l'UNIVAL a activement participé au déroulement de ce Projet Fac/IST et a beaucoup contribué à la compilation des données pour aboutir à ce document. Nous voudrions donc remercier tous ces collègues, particulièrement Dr. Emile Victor Coly, coordonnateur de l'Unité qui a accepté de relire le manuscrit.

Références Bibliographiques

Aw, S. 1996. La place de l'information scientifique et technique dans le Système national de recherche agricole et agro alimentaire et la problématique de son organisation: Document introductif. – In *Forum national de la recherche agricole et agro alimentaire*. 13-14 mars 1996. Dakar (Sénégal). Dakar: ISRA.

Bodart, M. G. 1996. *Appui à la définition d'un programme IST à l'ISRA: première approche pour la mise en place du complexe d'informations agricoles de Hann: Rapport de mission d'expertise à Dakar du 13 au 29 juin 1996*. Montpellier: CIRAD-GERDAT-UCIST.

Glarmet, A. 2000. *Appui documentaire au SNRA - Sénégal: Relance d'une politique d'acquisition. Rapport de mission d'expertise à Dakar du 14 au 26 novembre 1999*. Montpellier: CIRAD-DIST/DSI.

Iltis, N. 2000. *Appui aux systèmes d'information et de communication de la recherche agricole et agro alimentaire au Sénégal: Mission au Sénégal. 22 novembre au 10 décembre 1999*. Montpellier: CIRAD-DIST.

ISRA: Institut Sénégalais de Recherches Agricoles. 1998. *Rapport annuel 2002-2003: des innovations technologiques et bilan du plan quinquennal de l'ISRA 1990-1995*. Dakar: ISRA.

ISRA. 1995. *Réflexion prospective ou Projet d'entreprise de l'ISRA: volet information scientifique et technique*. Dakar: ISRA.

ORSTOM: Institut Français de Recherche Scientifique pour le Développement en Coopération. 1996. *1944-1994: 50 années de recherche en coopération au Sénégal*. Dakar: ORSTOM.

MASSAMBA CISSE is affiliated with Unité d'Information et de Valorisation, Institut Sénégalais de Recherches Agricoles (ISRA), Dakar, Senegal.

Contact Information

Massamba Cisse
Unité d'Information et de Valorisation
Institut Sénégalais de Recherches Agricoles (ISRA)
BP 3120 - Dakar
SENEGAL
PH: +221 33 8328426 / +221 77 5394643
Fax: +221 33 8322118
E-mail: massecisse@hotmail.com or mcisse@isra.sn
Web: <http://www.isra.sn>

Initiatives sur le Libre Accès aux Connaissances: Base de Données Institutionnelles d'Institut de Recherche pour le Développement (IRD)

Mamadou Samaké

EDITOR'S NOTE: This paper was presented at the 2nd Conference of the IAALD Africa Chapter, July 15–17, 2009, Accra, Ghana.

MOT CLÉS: base de données, accès à l'information

ABSTRACT: Open access to scientific information is an essential issue for both the scientific community and development actors. Starting with isolated initiatives, the open access to information movement led to the signing of several declarations including the *Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities*. Based on this Declaration, the Research Institute for Development (IRD) got involved in the open access movement. The fruit of this commitment is IRD's online Horizon full-text database, which covers the results of half a century of multidisciplinary research. This database, which currently contains 37,000 documents in digital format, is the result of a successful collaboration between researchers and information and documentation professionals.

RÉSUMÉ: Le libre accès à l'information scientifique est devenu un enjeu essentiel pour la communauté scientifique et les acteurs du développement. Parti d'initiatives isolées, le mouvement du libre accès à l'information a abouti à la signature de plusieurs déclarations dont celle de Berlin sur le « Libre accès à la connaissance en sciences exactes, sciences de la vie, sciences

humaines et sociales ». De cette déclaration, l'IRD s'est impliqué dans le mouvement du libre accès. Le fruit de cet engagement est la mise en ligne de sa base de données Horizon/plein texte. Cette base de données est le résultat d'un demi siècle de recherche pluridisciplinaire dans le monde. De nos jours trente sept mille documents sont sous forme numérique. Cette base de données est la collaboration entre chercheurs et professionnels de l'information et de la documentation. L'un de ses objectifs est de favoriser l'accès à l'information scientifique aux pays du sud.

RESUMEN: El acceso libre a la información científica es un tema importante tanto para la comunidad científica como para las instancias de desarrollo. El movimiento de acceso libre a la información comenzó con iniciativas aisladas que luego llevaron a la firma de varias declaraciones, entre ellas la *Declaración de Berlín sobre Acceso Abierto al Conocimiento en Ciencias y Humanidades*. Basándose en esta declaración, el Instituto de Investigación para el Desarrollo (IRD, en francés) se incorporó al movimiento de acceso libre. El fruto de este compromiso es la base de datos de texto completo en línea del IRD denominada *Horizon*, que contiene los resultados de medio siglo de investigación multidisciplinaria. Esta base de datos, que actualmente contiene 37,000 documentos en formato digital, es el resultado de una colaboración exitosa entre los investigadores y los profesionales de información y documentación.

Introduction

Permettre une communication scientifique des résultats de recherche est devenu un enjeu essentiel de toute réflexion sur l'information scientifique et technique. Cette prise de conscience des chercheurs de disposer sans entrave des résultats de recherche à la communauté scientifique.

Le mouvement en faveur de l'accès et à la diffusion de l'information scientifique s'est développé au point que ce principe est de plus en plus admis comme essentiel à la communication des résultats de recherche et à la diffusion des connaissances.

Le concept de libre accès s'exprime sous la forme de communication directe. Il est le fruit de l'évolution des techniques de communication avec de nouveaux supports, de nouveaux outils et de nouveaux services. Le libre accès à l'information scientifique et technique peut prendre deux formes:

- L'auto-archivage, ou dépôt d'article par les auteurs dans les archives électroniques à accès public;
- La publication de revues électroniques consultables en libres accès;

Parti d'une initiative privée, le mouvement du libre accès à l'information scientifique et technique a abouti à la déclaration de Berlin « sur le Libre Accès à la Connaissance en Sciences Exactes, Sciences de la Vie, Sciences Humaines et Sociales »¹.

Cette déclaration définit le libre accès comme requièrent: « L'engagement de tout un chacun en tant que producteur de connaissance scientifique ou détenteur du patrimoine culturel. Les contributions au libre accès se composent de résultats originaux de recherches scientifiques, de données brutes et de métadonnées, de documents sources, de représentations numériques de documents picturaux et graphiques, de documents scientifiques multimédia ».

- Cette vision du libre accès est partagée par les chercheurs et les institutions de recherche.
- C'est de cet exemple de la politique du libre accès à travers la base de données de l'IRD que je souhaite aborder dans cette communication.
- Comment cet institut de recherche est devenu acteur majeur dans la diffusion de l'information scientifique et technique?

- Quelles sont les acteurs ayant pris part à la mise en œuvre de ce gigantesque projet ?
- Quel rôle les professionnels de l'information et de la documentation ont joué ? Enfin quel est le projet innovateur pour les pays en développement et particulièrement le Burkina Faso ?

La Politique Institutionnelle

Créé en 1944, sous le nom ORSTOM, l'Institut de recherche pour le développement (IRD), est un établissement public Français à caractère scientifique et technologique. L'IRD conduit des programmes de recherche sur les relations entre l'homme et son environnement dans les pays du Sud. Il remplit les missions de recherche, d'expertise, de formation et d'information scientifique.

La gestion de l'information scientifique est d'une importance stratégique pour les institutions de recherche et les chercheurs. Elle permet de promouvoir les activités de recherche par la diffusion. Dans le cadre de la valorisation des résultats, l'IRD a entrepris de rassembler et de conserver les publications scientifiques, d'utiliser les moyens de les rendre disponibles, afin de favoriser l'accès à l'information scientifique aux pays du Sud.

Cette initiative institutionnelle a permis de rassembler un important fonds documentaire, résultats de recherche d'un demi de siècle. Les objectifs principaux sont :

- Constituer dans un premier temps la mémoire scientifique de l'institut ;
- Rendre les documents disponibles à travers ses centres de documentation ;
- Favoriser l'accès à l'information scientifique pour les pays du Sud

La Mémoire Scientifique

Pour atteindre ces objectifs, l'IRD a entrepris en 1996 un vaste projet de numérisation de son fonds documentaire. Ce projet de numérisation visait à constituer la mémoire scientifique de l'institution, valoriser les résultats acquis.

Ce fonds entreposé à son siège de Bondy depuis 1960 était estimé à 58 000 documents soit 2 500 000 pages.

L'évolution des techniques de stockage et de diffusion des documents électroniques a permis d'envisager d'en mettre l'intégralité sur CD-ROM et en ligne. Comme le soulignait le chef du projet Pier Rossi Luigi : « il s'agissait de dépasser l'espace de valorisation et de diffusion des bibliothèques physiques pour donner accès à la mémoire scientifique de l'IRD accumulé depuis la création de l'institut ».

Pour consolider son projet de numérisation, l'IRD a adhéré au mouvement du libre accès à l'information scientifique par la signature de :

- La Déclaration de Berlin en novembre 2005. Cette Déclaration demande la satisfaction de deux conditions que sont :

- « leurs auteurs et les propriétaires des droits afférents concèdent à tous les utilisateurs un droit gratuit, irrévocable et mondial d'accéder à l'œuvre en question, ainsi qu'une licence les autorisant à la copier et de diffuser des œuvres dérivées, sur quelque support numérique que ce soit et dans quelque but responsable que ce soit, sous réserve de mentionner comme il se doit son auteur (les règles usuelles de la collectivité continueront à disposer des modalités d'attribution légitime à l'auteur et d'utilisation responsable de l'œuvre publiée, comme à présent), tout comme le droit d'en faire des copies imprimées en petit nombre pour un usage personnel »

- « une version complète de cette œuvre, ainsi que tous ses documents annexes, y compris une copie de la permission définie dans ce qui précède, est déposée (et, de fait, publiée) sous un format électronique appropriée auprès d'au moins une archive en ligne, utilisant les normes techniques appropriées (comme les définitions des Archives Ouvertes [Open Archives]), archives gérée et entretenue par une institution académique, une société savante, une administration publique, ou un organisme établi ayant pour but d'assurer le libre accès, la distribution non restrictive, l'interopérabilité et l'archivage à long terme »

- L'accord inter-institution sur les archives ouvertes en juillet 2006 « PROTOCOLE D'ACCORD en vue d'une approche coordonnée, au niveau national, pour l'archivage ouvert de la production scientifique² ».

- Ces résultats sont accessibles dans la base de données HORIZON/PLEINS_TEXTES³. Cette base de données reçoit en moyenne quatre vingt dix mille visiteurs par mois avec plus de 120 000 documents téléchargés (rapport IRD 2007). De nos jours, cette base de données totalise trente sept mille documents téléchargeables en texte intégral toutes disciplines confondues (technologies agricoles, sciences humaines et sociales...) comment amener la communauté scientifique du sud à tirer profit de ces données pour assurer son développement ?

Les Centres de documentation

La politique de diffusion adoptée par l'IRD vise à favoriser les communautés scientifiques des pays du Sud à l'accès à l'information et au savoir. Cette politique a pour objectifs de :

- Restituer d'une part les résultats de recherches menées dans ces pays ;
- et d'autre part basé sur la Déclaration du Sommet de la Société de l'Information⁴ qui stipule que : « les informations relevant du domaine public devraient être facilement accessibles de manière à étayer la société de l'information (...). Il faudrait renforcer les institutions publiques telles que les bibliothèques, les archives, les musées, les collections culturelles et d'autres points d'accès »

« cès communautaires, de manière à promouvoir la préservation des archives documentaires et un accès libre et équitable à l'information ».

Cette vision à amener l'IRD à mettre un accent particulier sur ces centres de documentation dans les pays du sud, en ouvrant un portail d'entrée sur les ressources documentaires numérisées pour chaque centre de documentation.

Au Burkina Faso, le portail d'entrée est représenté par le centre d'information sur la Recherche et le Développement (CIRD) accessible via Internet⁵. Le CIRD joue le rôle intermédiaire dans la diffusion de l'information scientifique et technique.

Pour faciliter la mise en place du projet de numérisation, plusieurs acteurs ont collaboré il s'agit.

Les Chercheurs

Après la signature des différentes déclarations par l'institution, l'IRD a mis en place « une charte dépôt » en fin 2007 afin d'amener les chercheurs à adhérer au projet tout en déposant un exemplaire de chaque publication dans les différents centres documentations du pays où il

travaille. Nous estimons entre 1500 à 2000 la publication annuelle de l'institution.

Le portail HAL-IRD permet de déposer des publications scientifiques sur l'archive ouverte commune HAL et dans la base Horizon/Pleins Textes de l'IRD, en une seule opération.

De nos jours la nouvelle politique de l'institution pour évaluer les chercheurs est faite à partir des publications en ligne.

Les Professionnels de l'Information et de la Documentation

Le phénomène de diffusion de l'information s'est considérablement amplifié depuis l'arrivée d'Internet rendant possible l'accès à l'information. L'utilisateur est à la fois consommateur et diffuseur sans autre intermédiaire.

Or, le rôle du professionnel de l'information et de la documentation est celui d'intermédiaire entre deux communautés, celle producteur et l'autre consommateur.

Pour parvenir aux résultats du projet de numérisation, l'IRD a créé une collaboration entre les professionnels de l'information et la communauté scientifique.

FIGURE 1 – repérage des publications déposées par des auteurs IRD (source IRD)

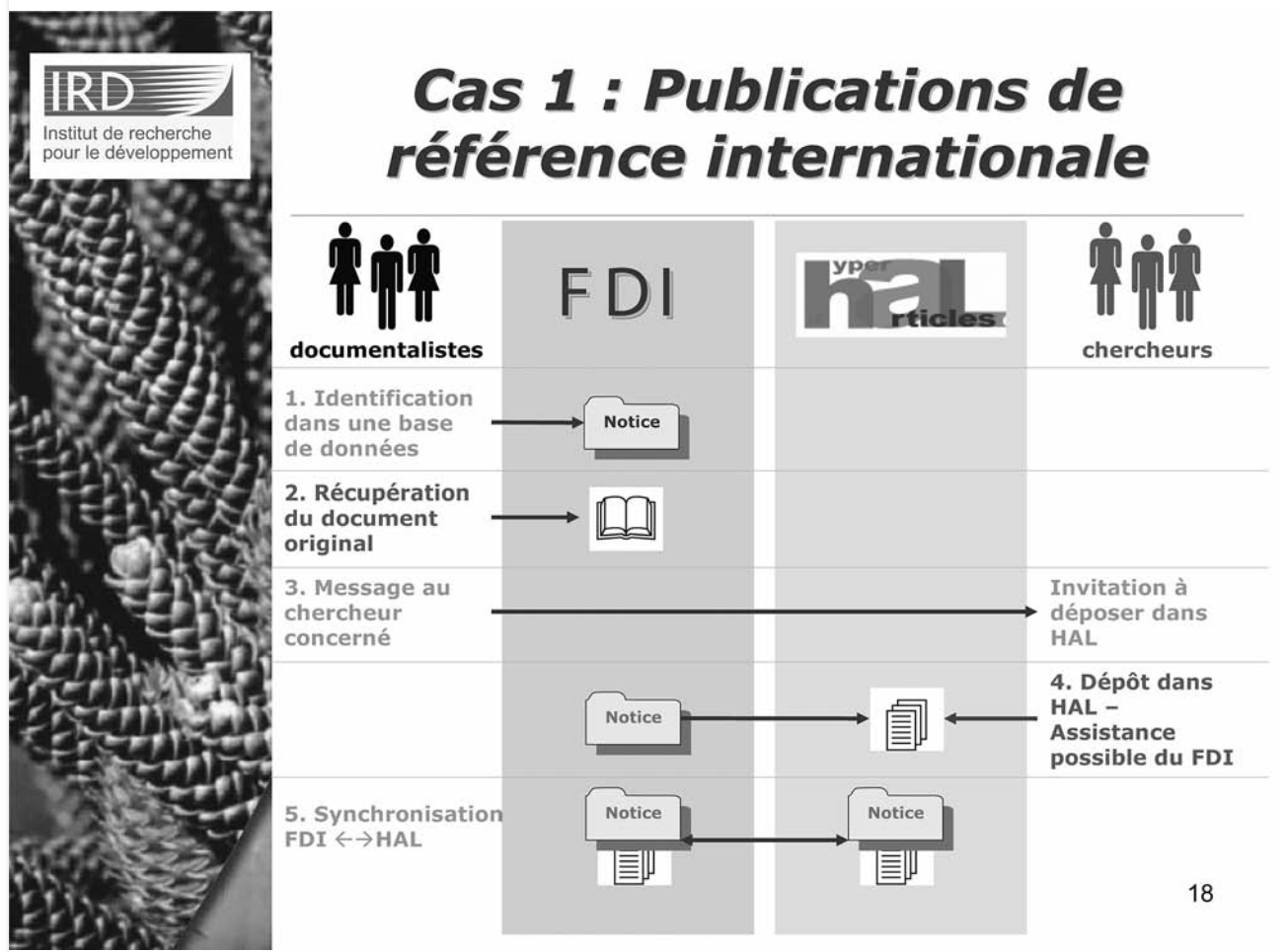


FIGURE 2 – document déposé dans Hal par des auteurs (source IRD)

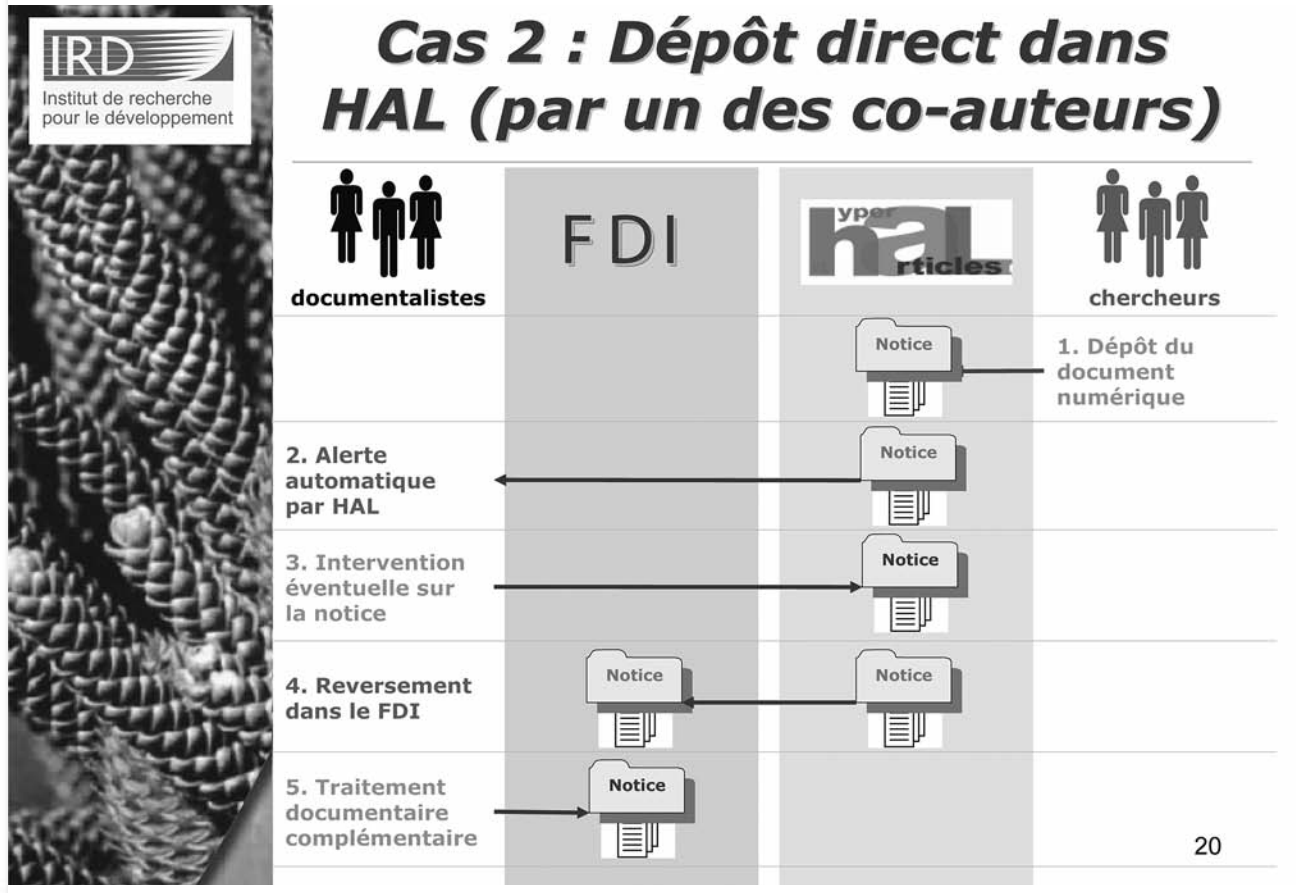
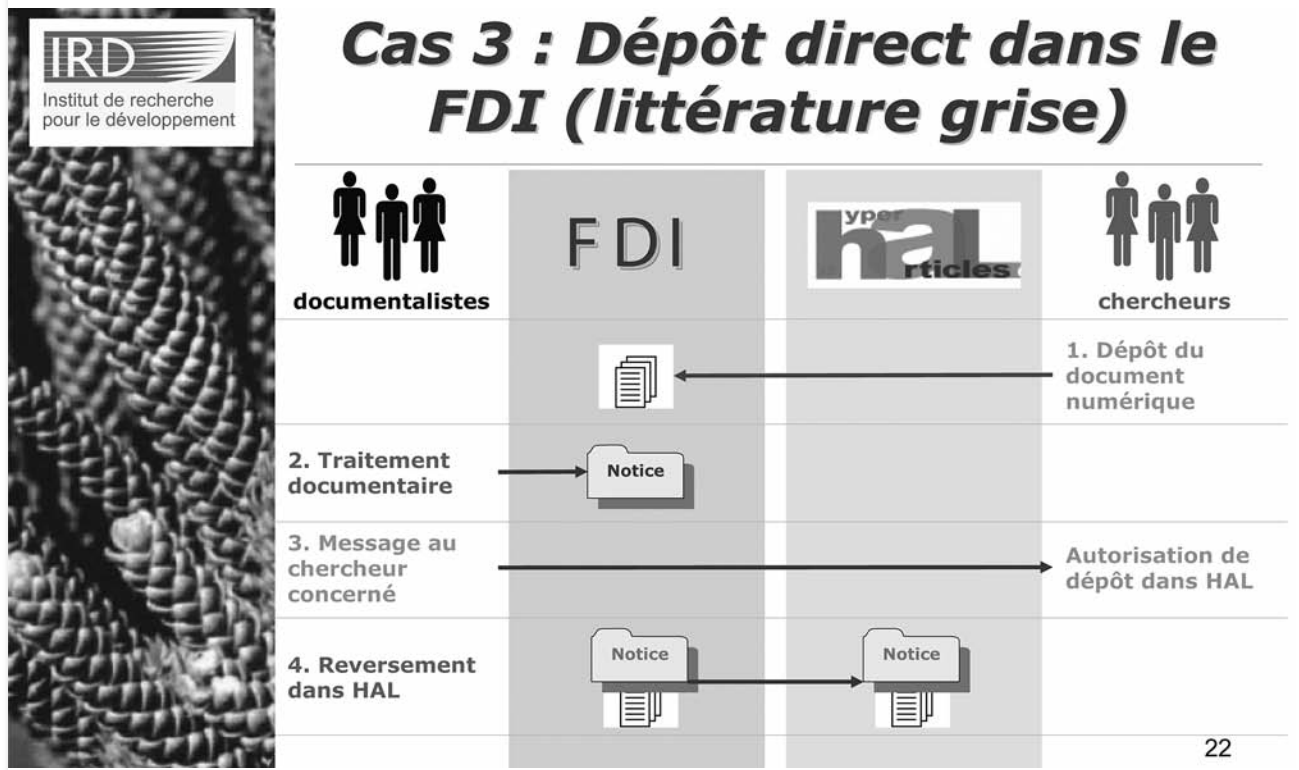


FIGURE 3 – exemple de dépôts dans la base générale (source IRD)



Les professionnels de l'information se chargent de collecter les publications des chercheurs pour leur mise en ligne. Le schéma ci-dessus montre le rôle joué par les professionnels de la documentation dans le processus de numérisation.

Cette riche collaboration entre la communauté scientifique et les professionnels de l'information et de la documentation a permis la mise en place de la base de données scientifique Horizon/pleins Textes.

L'IRD un Exemple de Partenariat au Burkina Faso

Le Centre d'Information sur la Recherche et le Développement (CIRD) au Burkina Faso est le fruit de la coopération entre l'Institut de Recherche pour le Développement (IRD), le Centre de Coopération Internationale en Recherche Agronomique (CIRAD) et l'ambassade de France. Il a pour mission de contribuer à la fracture numérique par la diffusion de l'information scientifique et technique conformément à l'un des objectifs de la Déclaration de principe du Sommet mondial sur la société de l'information, qui stipule: «Encourager la coopération internationale et régionale».

Outre ses missions de recherche pour le développement, l'institut de Recherche pour le Développement s'est engagé à soutenir le projet Système d'Information scientifique et Technique (SIST) en apportant son soutien logistique, technique et financier.

Le SIST se décline en trois volets:

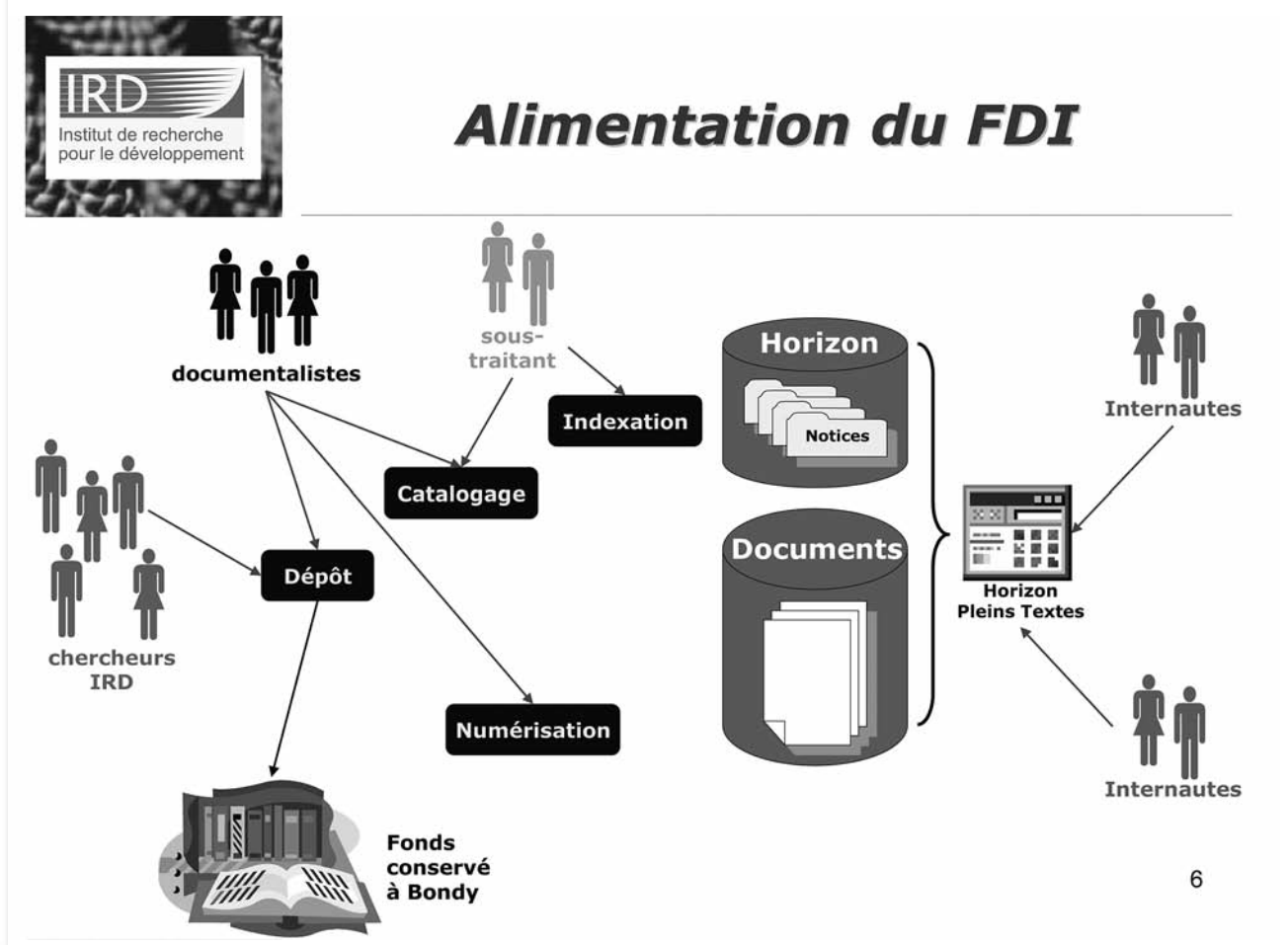
- La mise en place d'un système d'information dans chaque pays partenaire du projet,
- La création de réseaux d'expertise sur des thèmes prioritaires,
- Formations et transferts d'expertise.

Ce projet regroupe douze pays dont le Burkina Faso. Il doit aboutir à la mise en place d'une base de données de l'ensemble des publications scientifiques de chaque pays.

Le projet SIST souhaite encourager et développer les échanges, la production et la diffusion d'informations scientifiques.

La diffusion d'informations scientifiques est devenue aujourd'hui un moyen essentiel d'échanges, de communiquer des résultats de recherche au profit de la communauté scientifique. Le progrès technologique a bouleversé les activités humaines.

FIGURE 4 – Schéma général horizon/pleins textes (source IRD)



Dans ce nouvel environnement de mutation technologique, de la « world culture » et au regard de la faiblesse des publications scientifiques de l'Afrique (moins de 1%⁶). Comment l'Afrique peut elle résoudre le problème de la fracture numérique ?

Notes

1. <http://openaccess.inist.fr/spip.php?article38>
2. <http://openaccess.inist.fr/spip.php?article58>
3. <http://www.documentation.ird.fr/>
4. <http://openaccess.inist.fr/spip.php?article26>
5. <http://www.ird.bf/cird/>
6. Sommet Mondial sur la Société de l'Information (Tunis 2005)

MAMADOU SAMAKÉ is Aide Documentaliste/Communicateur Multimédia, Institut de Recherche pour le Développement (IRD), Ouagadougou, Burkina Faso.

Contact Information

Mamadou Samaké
Aide Documentaliste/Communicateur Multimédia
Institut de Recherche pour le Développement (IRD)
688 Avenue Pr. Joseph Ki Zerbo
01 BP 182 Ouagadougou
BURKINA FASO
PH: +226 50 30 67 37
Fax: +(226)50 31 03 85
E-mail: samake@ird.bf



IAALD Africa Chapter Conference Report

This special issue of *Agricultural Information Worldwide* contains selected papers from the 2009 IAALD Africa Chapter international conference, which was held July 15–17, 2009 at the M Plaza Hotel in Accra, Ghana, with the theme “Towards Opening Access to Information & Knowledge in the Agricultural Sciences and Technology in Africa.” The discussions at the conference focused on initiatives aimed at opening access to agricultural sciences and technology information and knowledge, including open access/archives initiatives, the challenges faced by institutions in the agricultural sciences and technology field in Africa, and the way forward.

The purpose of the conference was to initiate meaningful discussion and debate and commitments to actions around opening access to information and knowledge in agricultural sciences and technology generated in public research organizations and academic institutions in Africa. The specific objectives were:

- To build awareness of the importance of opening access to agricultural information and knowledge in Africa among key stakeholders, i.e. research policy makers, agriculture research scientists, authors, information professionals, information users, etc.;
- To share information and lessons learned about open access/archives initiatives and projects being undertaken in the agricultural sciences and technology on the continent and elsewhere; and
- To develop an advocacy strategy for opening access to information and knowledge in agricultural sciences and technology in Africa to be implemented by the IAALD Africa Chapter, its members and other partners.

The conference was opened by the Honorable Sherry Ayitey, Ghana’s Minister for Environment, Science and Technology on July 15, 2009. Dr. Monty Jones, Executive Director of the Forum for Agricultural Research in Africa (FARA) delivered the keynote address at the opening ceremony.

Around 100 individuals representing various stakeholders in agricultural information attended the confer-

Conference attendees hard at work at the Africa Chapter conference



ence. These included farmers, representatives of farmer and rural-based organizations, research scientists, lecturers, policy makers, information professionals, information technology specialists, agricultural information service providers, and so forth. The following key recommendations came out of the conference:

- Agricultural research institutions and universities in Africa should:
 - Develop and implement appropriate information communication and management (ICM) policies and strategies to promote and facilitate access to public agricultural sciences and technology information and knowledge.
 - Invest in agricultural information management and communication infrastructure and activities including building full-text-based institutional repositories of research outputs.
 - Put mechanisms in place to ensure that appropriate procedures are followed, including obtaining copyright clearance and necessary permissions, when collecting materials for open archive institutional repositories.
- Agricultural information professionals in Africa should:
 - Build appropriate capacities and acquaint themselves adequately with various issues relating to open access and open archives initiatives including the benefits and disadvantages associated with open

access and intellectual property rights (IPR) issues in an open access environment.

- Develop advocacy skills to enable them to advocate effectively for increased investment in opening access to agricultural sciences and technology information and knowledge.
- IAALD Africa Chapter should develop information materials, including policy briefs, highlighting the benefits of open access and open archives to institutions and research scientists to be used in advocacy activities by the Chapter members.
- Stakeholders in the agricultural sciences and technology field, i.e. research scientists, policy decision makers, funders of research, information professionals, etc. in Africa should collaborate, work together and support initiatives aimed at making agricultural research information publicly available cost effectively and accessible to all.
- Public and private institutions should partner on innovative solutions aimed at using hand-held devices such as mobile phones, PDAs, etc. to deliver relevant and timely information to the farmers in Africa cost effectively.

The way forward is for the Africa Chapter to start implementing some of the above recommendations.

The full Conference report (in English and French) is available online via the Chapter's website:

http://www.iaald-africa.org/conferences_en.html

The PowerPoint presentations from the Conference can be accessed on SlideShare (search for IAALD Africa Chapter):

<http://www.slideshare.net>

The Third IAALD Africa Chapter conference will be hosted by the Information Training and Outreach Centre for Africa (ITOCA) in 2012 in South Africa. Details will be shared via the Chapter's website as they become available.

■ *submitted by Justin Chisenga, IAALD Africa Chapter President*

IAALD Chapter for UK and Ireland Formed

FIBS, or Frontiers in Information for Bio- and Environmental Sciences, is a new group formed to serve the professional interests of all involved in the management of information in biosciences, biodiversity and the environment. It was developed under IAALD auspices as its United Kingdom and Ireland Chapter. Members of IAALD based in the UK and Ireland will automatically be enrolled as members of the new group.

The new Chapter's launch meeting, FIBS2010, was held in London on February 26, 2010. With the theme "Working Together — Collaborative Problem Solving," FIBS2010 explored various examples of collaborative activity with a view towards defining a practical way forward for this new professional group. Time was also spent discussing the new Chapter's structure, purpose and direction, and planning future activities.

This new Chapter began with exploratory meetings that were held in 2007 under the heading "Focus on Information in the Bio- and Environmental Sciences."

FIBS1: "Frontiers in Information provision for the Bio-and Environmental Sciences" was held in London on January 25, 2007.

FIBS2: "Image Management in the Bio- and Environmental Sciences" was held in association with the UK eInformation Group (UKEiG / <http://www.ukeig.org.uk/>) in Manchester on May 31, 2007.

An informal steering group chaired by Roger Mills, Oxford University Library Services, was formed and the Association of Libraries in Land-based Colleges and Universities (ALLCU / <http://www.allcu.org.uk/>) became the UK partner of IAALD in 2008. An online survey was conducted in the summer of 2009 to establish the level of support for a permanent FIBS group. The survey revealed enthusiasm for the concept, and led to the planning of FIBS2010.

For more information about the IAALD UK and Ireland Chapter, go to: <http://www.ouls.ox.ac.uk/fibs>

■ *submitted by Roger Mills*

IAALD Membership Approves Electronic Voting

In October 2009, the IAALD membership was asked to vote on a proposed change to the IAALD Constitution. The change would expand the voting methods used by the organization to include electronic voting to collect and tabulate the membership votes. By adding this method, IAALD would expand member voting methods to regular mail, e-mail and voting at the General Assembly. The proposed change follows:

Current wording in the Constitution:

10. Amendments to the Constitution – Amendments to the Constitution may be adopted only in a session of the General Assembly by a two-thirds majority of the members present and entitled to vote at the session.

Proposed Change:

10. Amendments to the Constitution – Amendments to the Constitution may be adopted by a two-thirds majority of the membership voting. The voting may take place by any of the following methods: electronically with a ballot going to all eligible voting members via e-mail, by regular mail with a ballot going to all eligible members via the postal system or in a session of the General Assembly by members present and entitled to vote at the session.

Following the vote, IAALD Secretary/Treasurer Toni Greider reported that the proposed change to the constitution passed with 100% of the ballots cast approving electronic voting as an additional method for IAALD to conduct a vote by the general membership. This is a very positive step forward for IAALD. Electronic voting will provide the flexibility needed by the membership to

make decisions, enact changes, and move forward in a timely manner to shape the future of the organization.

IAALD Executive Committee Considers Locations for Future World Congresses

In late 2009, the IAALD Executive Committee invited expressions of interest from IAALD partners, members and associated groups to host the 14th World Congress, to be held in 2013, 2014 or 2015. Proposals were to be submitted by February 27, 2010.

The Executive Committee will review proposals received and make a decision regarding the location of the next World Congress by April 15, 2010 to be announced in Montpellier, France at the 13th World Congress.

In making its decision, the Executive Committee will consider at least the following criteria:

- estimated costs to hold the congress, and for participants to attend; including likelihood of sponsorships and income generation for IAALD;
- meeting facilities, logistics and accommodation options, including international access;

- IAALD actual and potential membership base in the country/region and opportunities to strengthen this;
- organizational commitment and capacities of the host institution(s); and
- co-organizing opportunities with IAALD partners and allies.

Recent IAALD World Congresses have been held in:

- 2010: France
- 2008: Japan
- 2005: USA
- 2000: Senegal
- 1995: Australia
- 1990: Hungary
- 1985: Canada
- 1980: Philippines

For more information on the upcoming 13th World Congress in Montpellier, France, go to:

<http://iaald2010.agropolis.fr>

UPCOMING EVENTS

2010

- **GCARD 2010 / Global Conference on Agricultural Research for Development: *Building from Demand: Transforming Agricultural Research for Development***, Montpellier, France, March 28–31, 2010. For more information: <http://www.gcard2010.net>
- **IAALD XIIIth World Congress: *Scientific and Technical Information and Rural Development***, Montpellier, France, April 26–29, 2010. For more information: <http://iaald2010.agropolis.fr/>
- **USAIN 2010 / 12th Biennial Conference of the United States Agricultural Information Network: *Agriculture without Borders: Creating Knowledge and Partnerships Across Disciplines and Across the World***, West Lafayette, Indiana, USA, May 9–12, 2010. For more information: <http://usain.lib.purdue.edu/>
- **AIAEE 2010 / 26th Annual Conference of the Association for International Agricultural and Extension Education: *Innovative Cooperation and Collaboration***, Saskatoon, Canada, May 15–18, 2010. For more information: <http://www.aiaee.org/>
- **NETC 2010 / National Extension Technology Conference: *High Tech, Down Home***, Auburn, Georgia, USA, May 23–26, 2010. For more information: <http://www.aces.edu/netc2010/>
- **WCCA 2010 / 8th World Congress on Computers in Agriculture and Natural Resources: *Sustainable Biosystems through Engineering***, Québec, Canada, June 13–17, 2010, in conjunction with the 17th CIGR World Congress. For more information: <http://www.cigr2010.ca>
- **IATUL 2010 / International Association of Scientific and Technological University Libraries Conference: *The Evolving World of E-Science: Impact and Implications for Science and Technology Libraries***, West Lafayette, Indiana, USA, June 20–24, 2010. For more information: <http://blogs.lib.purdue.edu/iatul2010/>
- **ACE 2010 / Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (formerly Agricultural Communicators in Education) Conference**, St. Louis, Missouri, USA, June 14–17, 2010. For more information: <http://www.aceweb.org/meetings/ace2010.html>
- **IFLA 2010 / World Library and Information Congress – 76th IFLA Council and General Conference: *Open Access to Knowledge—Promoting Sustainable Progress***, Gothenburg, Sweden, August 10–15, 2010. For more information: <http://www.ifla.org/en/ifla76>
- **AFITA 2010 / Asian Federation of Information Technology in Agriculture: *The Quality Information for Competitive Agricultural-Based Production Systems & Commerce***, Bogor, Indonesia, October 4–7, 2010. For more information: <http://afta2010.ipb.ac.id/>

2011

- **AIAEE 2011 / 27th Annual Conference of the Association for International Agricultural and Extension Education**, Windhoek, Namibia. For more information: <http://www.aiaee.org/>
- **IFLA 2011 / World Library and Information Congress – 77th IFLA Council and General Conference: *Libraries Beyond Libraries: Integration, Innovation and Information for All***, San Juan, Puerto Rico, August 13–18, 2011. For more information: <http://archive.ifla.org/IV/ifla77/index.htm>
- **EFITA 2011 / European Federation for Technology in Agriculture, Food and the Environment**, Netherlands.
- **WCCA 2011 / 9th World Congress on Computers in Agriculture and Natural Resources**, Namibia.

2012

- **3rd IAALD Africa Chapter Conference**, hosted by the Information Training and Outreach Centre for Africa (ITOCA), South Africa.

Abstracts from Partner Publications

Revista AIBDA, Vol. 30, No. 1–2 (2009)

TITLE: ■

Un estudio retrospectivo del Consejo Nacional Para Asuntos Bibliotecarios (CONPAB) y su constitución como una red de políticas de información

AUTHOR: Egbert John Sánchez Vanderkast

RESUMEN: El objetivo de este estudio es demostrar que las asociaciones profesionales como el *Consejo Nacional para Asuntos Bibliotecarios* de las Universidades Públicas Estatales podrían ser consideradas como una red de políticas de información ya que se puede identificar en ellas los elementos que enuncia Van Waarden (1992) como: Actores, Función, Estructura, Institucionalización, Reglas de Conducta, Relación de Poder y Estrategia de los Actores; y las que concibe Börzel, el interés común, la mediación y el intercambio de experiencias, como parte fundamental para la conformación de redes.

ABSTRACT: The aim of this paper is to demonstrate that professional associations, such as Consejo Nacional para Asuntos Bibliotecarios de las Universidades Públicas Estatales (CONPAB UPES), may be considered as an information policy network since the elements enunciated by Van Waarden (1992), i.e. Actors, Function, Structure, Institutionalization, Convention for Interaction, Distribution of Power and Actors' Strategies, are identified among them. Likewise, the elements conceived by Börzel, i.e. Common Interest, Intermediation, and Experience Sharing, are found to be a fundamental part for networks.

TITLE: ■

El movimiento del acceso abierto y el mundo bibliotecario desde la experiencia del proyecto E-LIS

AUTHOR: Julio Santillan-Aldana

RESUMEN: Expone sobre los beneficios del acceso abierto para el ámbito bibliotecario desde la experiencia del proyecto E-LIS. Describe distintos aspectos del proyecto y su impacto en la comunidad internacional de investigadores en bibliotecología y ciencias de la información.

ABSTRACT: This paper discusses open access benefits for libraries and reports on the E-LIS Project. It describes different aspects of the project and its impact on the international library and information science research community.

TITLE: ■

Análisis del proceso administrativo de planeación en una biblioteca académica especializada

AUTHOR: Cristina Restrepo Arango

RESUMEN: Este trabajo analiza el proceso de planeación administrativa desarrollado en una biblioteca académica especializada mexicana, para ello se aplica la observación participante, la entrevista y la comparación con la teoría con la práctica administrativa. Además, se revisan los documentos sobre planeación como: objetivos generales y específicos, políticas, procedimientos, reglamentos, visión, misión, objetivos a corto y mediano

plazo, planes, programa de trabajo del año 2009, mapa de programas y proyectos de biblioteca y presupuesto. También se explora el uso de la planeación estratégica y la técnica de planeación, programación y presupuestación. De acuerdo con el análisis y revisión de los documentos que forman parte del proceso de planeación se evidencia que los objetivos tanto generales como específicos que aparecen en los planes y programas se confunden con funciones. Las políticas de procesos técnicos mezclan las reglas y con los procedimientos. Además, la misión y la visión no representan el propósito y el ideal de la biblioteca que desean los bibliotecarios. El reglamento, el presupuesto y el mapa de proyectos y programas son precisos y acordes con el entorno de la biblioteca.

ABSTRACT: This paper analyzes the management planning process developed in a specialized academic library in Mexico, through participant observation, interviews and a comparison of theory and administrative practice. In addition, planning documents were reviewed, including general and specific objectives, policies, procedures, regulations, vision, mission, short- and medium-term goals, 2009 work program, map of library programs and projects and budget. The use of strategic planning and technology planning, programming and budgeting was also explored. Based on an analysis and review of documents that are part of the planning process, it is evident that there is some confusion regarding functions for both the general and specific objectives listed in the plans and programs, i.e. policy is mixed with technical processes and rules of procedures. Furthermore, the mission and vision do not align with the ideal that most librarians would desire. The regulations, budget and map of projects and programs are accurate and consistent with the library environment.

TITLE: ■

La privatización del agua en el Web of Science según las evidencias de la minería de textos y el análisis de co-citación

AUTHOR: Carlos Vilchez-Román y Rubén Urbizagástegui Alvarado

RESUMEN: Los defensores del libre mercado afirman que la administración de los bienes y recursos deberían estar privatizados, esto incluye el servicio del agua. Sin embargo el interés de las empresas es maximizar utilidades, no elevar el bienestar social. Este tema es poco tratado en la literatura académica, al menos aquella registrada en las bases de datos Web of Science y Scopus. Para caracterizar la manera en que los artículos científicos han abordado el problema de la privatización del agua, se buscaron en las bases de datos Web of Science empleando palabras claves relacionadas con la privatización del agua. Luego esos registros fueron exportados a los programas BibExcel y VBPro. BibExcel permitió identificar los autores y artículos más citados, así como generar una matriz de co-citación. El programa VBPro permitió generar mapas bidimensionales del contenido del título y resumen de los artículos localizados en las dos bases de datos antes señaladas. El análisis de citas y la minería de textos revelaron una concentración temática en torno a autores claves y temas recurrentes, lo cual sugiere una perspectiva limitada y reducida en torno a este importante problema social.

ABSTRACT: Advocates of free markets argue that the administration of assets and resources should be privatized, including

water service. However, the aim of businesses is to maximize profits, not to raise social welfare. This topic has received little attention in the academic literature, at least among that recorded in the Web of Science and Scopus databases. To identify how scientific papers have addressed the problem of water privatization, Web of Science was searched using keywords related to the privatization of water. The records were then exported to BibExcel and VBPro. BibExcel made it possible to identify the most cited articles and authors, as well as to generate a co-citation matrix. VBPro generated two-dimensional maps of contents from the titles and abstracts from these two databases. The citation analysis and text mining revealed a concentration on key authors and themes, which suggests a limited and narrow perspective on this important social problem.

TITLE: ■

A cultura e a diversidade no acesso e uso do portal periódicos da Universidade Federal de Santa Catarina (UFSC)

AUTHOR: Ursula Blattmann y Andrenizia Aquino Eluan

RESUMEN: A Universidade Federal de Santa Catarina, com 53 revistas científicas, a partir de fevereiro de 2007 iniciou estudos para o uso e a implantação da plataforma canadense Open Journal System - OJS como uma fonte de informação e divulgação do conhecimento científico de forma livre e gratuita, proporcionando a disseminação do conhecimento produzido em âmbito internacional. Este estudo relata a criação do Portal de Periódicos UFSC (<http://www.periodicos.ufsc.br>) como fonte de informação de acesso livre. Apresenta a pesquisa sobre a opinião dos editores das primeiras 14 revistas sobre as vantagens e os problemas na utilização desta ferramenta para a editoração eletrônica de revistas científicas. Entre as dificuldades relatadas pelos editores, nota-se a necessidade de conhecer as diversas funções do processo de editoração da respectiva plataforma. Utilizou-se o ambiente wiki (<http://oficina-seer.wikidot.com>) para espaço de troca de experiências e aprendizado entre editores e bolsistas das revistas e até o final de 2008, dezoito (18) revistas concluíram o processo de migração e começam a proceder a indexação em bases internacionais. Enquanto a visibilidade internacional já alcança mais de 500 mil acessos únicos provenientes de mais de 90 países (<http://www.periodicos.ufsc.br/awstats/awstats.pl>).

ABSTRACT: In February 2007, the Universidade Federal de Santa Catarina, which has 53 scientific journals, began studies on using the Canadian Open Journal System (OJS) as an information source to the scientific knowledge output produced by the university. This study reports on the development of the UFSC Journals Portal (<http://www.periodicos.ufsc.br>) as a free information source. It presents the opinions of 14 journal editors regarding the advantages and problems with using the electronic scientific journal publishing software. Among the difficulties reported by the editors was the need to know the different functions of the editorial process. A wiki was used to enable the exchange of experiences and provide a learning space for all publishers and trainees. At the end of 2008, the data migration process had been completed for 18 journals and journal indexing was underway. International visibility has already reached over 500,000 accesses from more than 90 countries (<http://www.periodicos.ufsc.br/awstats/awstats.pl>).

TITLE: ■

La información y el conocimiento en el mundo andino

AUTHOR: Romulo Solano Ramos

RESUMEN: Estudia el proceso de comunicación e información en el mundo andino. Realizado a través de entrevistas en Comunidades Campesinas de la sierra del Perú, describe las características históricas de la cultura andina señalando sus inicios hasta constituirse en etnias. Con la llegada de los invasores europeos, el mundo andino fue modificado, trastocando la convivencia del período autónomo, pues al igual que los animales, las plantas, los montes andinos, la cultura andina, incluida la lengua, fue destruida y relegada para imponer su cultura diferente bajo pena de muerte. Sin embargo, la cultura andina sigue vigente debido a su originalidad, a su identidad, manteniéndose el “diálogo” y “reciprocidad” entre todos los componentes de la colectividad natural. El saber tradicional para la culturas nativas continua siendo el soporte cognoscitivo, principal en la reproducción de la vida agropecuaria, pero ésta, a pesar de ser su base se encuentra erosionado y desarticulado, producto de la colonización europea y la neocolonización.

ABSTRACT: This paper studies the process of communication and information in the Andean world, through interviews conducted in rural communities of the highlands of Peru, and describes the historical characteristics of the Andean culture. With the arrival of European invaders, the Andean world was changed. Like the animals and plants, the Andean culture, including language, was destroyed and in its place a different culture was imposed on penalty of death. Nevertheless, the Andean culture lives on today due to its originality, identity, and the “dialogue” and “reciprocity” between all components of the natural community. Traditional knowledge for native cultures continues to be the principal cognitive support for the reproduction of farm life. However, the traditional base is being eroded principally as a product of European colonization and neocolonialism.

TITLE: ■

El uso de la información bibliográfica en Oaxaca: resultados de un estudio de caso de difusión integral en medios masivos

AUTHOR: MC. J. Félix Vázquez Quintana

RESUMEN: Se describen los resultados obtenidos, al concluir en el Estado de Oaxaca, México, tres proyectos de investigación interrelacionados sobre el control y difusión de la información, por los medios masivos de comunicación: prensa, radio y televisión local. La oferta del servicio, vinculada con la red estatal de bibliotecas públicas, esta formada por 470 bibliotecas y esta vinculada a la red Científica de Información Tecnológica Agropecuaria y Ciencias Afines de Oaxaca (CITACAO), con 46 bibliotecas especializadas.

ABSTRACT: Three interrelated research projects on information control and dissemination carried out in the State of Oaxaca, Mexico, are described. Information was communicated through local press, radio and television. The information service, which is linked to the state network of public libraries, is formed by 470 libraries and is linked to the 46 special libraries of the Scientific Network of Technological Agricultural Information of Oaxaca (CITACAO).

International Association of Agricultural Information Specialists
Association Internationale des Spécialistes de l'Information Agricole
Asociación Internacional de Especialistas en Información Agrícola

AGROPOLIS
INTERNATIONAL

www.agropolis.fr



www.iaald.org

**IAALD XIIIth World Congress
organized by Agropolis International
26-29 April 2010, Montpellier, France**

Scientific and Technical Information and Rural Development

The renewed worldwide interest in agriculture and questions dealing with food crises increase the need for quality information for actors in rural development. Bringing their knowledge and know-how, the Scientific and Technical Information specialists can contribute to providing quality information. The congress organised by

IAALD and Agropolis International will

ensure fruitful exchanges between information specialists and actors of rural development facing these key challenges in agriculture.



© Ville de Montpellier



© F.Villemejeanne

**Contact: iaald2010@agropolis.fr
<http://iaald2010.agropolis.fr>**

Agropolis International
Avenue Agropolis
F-34394 Montpellier CEDEX 5
Tel.: +33 (0)4 67 04 75 75

International Association of Agricultural Information Specialists
Association Internationale des Spécialistes de l'Information Agricole
Asociación Internacional de Especialistas en Información Agrícola

AGROPOLIS
INTERNATIONAL

www.agropolis.fr



www.iaald.org

XIII^e Congrès mondial de l'IAALD organisé par Agropolis International 26-29 Avril 2010, Montpellier, France

Information scientifique et technique et développement rural

Le regain d'intérêt pour l'agriculture et les questions soulevées par les crises alimentaires accentuent les besoins en information de qualité pour tous les acteurs du développement rural. En apportant leurs connaissances et leur savoir-faire, les professionnels de l'information scientifique et technique peuvent contribuer à répondre

à ces besoins. Le congrès organisé par l'IAALD et Agropolis International favorisera un dialogue constructif entre les professionnels de l'information et ceux du développement rural pour faire face aux grands enjeux agricoles.



© Ville de Montpellier



© F.Villemejeanne

**Contact : iaald2010@agropolis.fr
<http://iaald2010.agropolis.fr>**

Agropolis International
Avenue Agropolis
F-34394 Montpellier CEDEX 5
Tél. : +33 (0)4 67 04 75 75



IAALD'S MISSION is to enable its members to create, capture, access and disseminate information to achieve a more productive and sustainable use of the world's land, water, and renewable natural resources and contribute to improved livelihoods of rural communities.

To further this mission:

IAALD **CONNECTS** agricultural information specialists worldwide, providing platforms and spaces for information dissemination, exchange and knowledge sharing;

IAALD **CONVENES** agricultural information specialists worldwide, organising meetings and catalyzing dialogue among all agricultural information stakeholders;

IAALD **COMMUNICATES** and advocates the value of knowledge and information to its members and others, improving the status and practice of agricultural information management and dissemination;

IAALD **COLLABORATES** with members and other partner organisations, facilitating educational and other opportunities across agricultural information communities.

Executive Committee of IAALD

OFFICERS

Peter Ballantyne, President
Head, Knowledge Management and
Information Services
International Livestock Research Institute
(ILRI)

P.O. Box 5689
Addis Ababa
ETHIOPIA

E-mail: peter.ballantyne@iaald.org

Stephen A. Rudgard, First Vice President
Chief, WAICENT Capacity Building
and Outreach Branch

FAO
Viale Terme Caracalla
Rome 00100
ITALY

PH: +39 06 570 56171

Fax: +39 06 570 54049

E-mail: Stephen.Rudgard@fao.org

Antoinette P. Greider, Secretary/Treasurer
Associate Dean for Research and Education
University of Kentucky Libraries
P.O. Box 63

Lexington, Kentucky 40588-0063
USA

PH: +859-257-0500 ext. 2084

Fax: +859-323-4719

E-mail: Toni.Greider@iaald.org

Debra L. Currie, Editor
Collection Manager for Agricultural
& Environmental Sciences

NCSU Libraries
North Carolina State University
1701 Su John Road
Raleigh, North Carolina 27607
USA

PH: +919-515-7556

Fax: +919-513-1108

E-mail: debbie_currie@ncsu.edu

EXECUTIVE COMMITTEE MEMBERS

Vielka Chang-Yau
Chief Librarian
Smithsonian Tropical Research Institute
PANAMA
E-mail: changyau@si.edu

Michal Demes
Information Management Specialist
FAO SEUR
HUNGARY
E-mail: michal.demes@fao.org

Elizabeth Dodsworth
Global Director, Knowledge for
Development
CABI International
UNITED KINGDOM
E-mail: e.dodsworth@cabi.org

Elizabeth Doupé Goldberg
Head, Capacity Development Research
and Support Unit
Bioversity International
ITALY
E-mail: e.goldberg@cgiar.org

Barbara Hutchinson, PhD
Assistant to the Vice Dean and Director
Agricultural Experiment Station
College of Agriculture and Life Sciences
University of Arizona
USA
E-mail: barbarah@ag.arizona.edu

Nihad Maliha, PhD
Manager, Library and Information Services
ICARDA
SYRIA
E-mail: n.maliha@cgiar.org

H.V. Mote, PhD
Librarian
Saraswati Institute of Technology
and Management
INDIA
E-mail: hv_motenbri@yahoo.com

Takashi Nagatsuka
President, JAALD
Department of Library, Archival
and Information Studies
Tsurumi University
JAPAN
E-mail: nagatsuka-t@tsurumi-u.ac.jp

Shuchun Pan
Director, Digital Library Division
Agricultural Information Institute
Chinese Academy of Agricultural Sciences
PEOPLE'S REPUBLIC OF CHINA
E-mail: pans@mail.caas.net.cn

REPRESENTATIVES OF REGIONAL AND NATIONAL ASSOCIATIONS

Justin Chisenga (IAALD Africa Chapter)

Michal Demes (IAALD Central and
Eastern Europe Chapter)

Prof. Mei Fangquan (IAALD China
Chapter)

Keiko Katsuragi (JAALD)

Roger Mills (FIBS)

Rubén Urbizagástegui (AIBDA)

HONORARY MEMBERS OF IAALD

D. Kervegant (France)

T.P. Loosjes (Netherlands)

M.T. Martinelli (Italy)

H. Haendler (FRG)

J.H. Howard (USA)

J. van der Burg (Netherlands)

P.Q.J. André (USA)

IAALD is a founding member
of the International Network for
Information Technology in Agricul-
ture (INFITA) — www.infita.org

IAALD is a partner in the Coherence
in Information for Agricultural
Research for Development (CIARD)
initiative — <http://www.ciard.net>

- 101 ***Towards Opening Access to Information and Knowledge in the Agricultural Sciences and Technology in Africa*** / Justin Chisenga
- 103 Vers l'accès ouvert à l'information et la connaissance pour les sciences agricoles et la technologie en Afrique
- 105 Hacia el establecimiento del acceso libre a la información y al conocimiento en el campo de las ciencias y tecnologías agrícolas en los países africanos
- 107 ***Enhancing Access and Exchange of Agricultural Information and Knowledge in Kenya: The Case of Kenya Agricultural Research Institute (KARI)*** / Rachel A. Rege, Patrick Maina, Richard Kedemi, and Peninah Mwangi
- Améliorer l'accès et l'échange d'information et du savoir agricole au Kenya: l'expérience du KARI
Mejorando el acceso e intercambio de información y conocimientos agrícolas en Kenia: la experiencia del KARI
- 113 ***Open Access Publishing: Views of Researchers in Public Agricultural Research Institutions in Zambia*** / Justin Chisenga and Davy Simumba
- Publier en accès ouvert: avis des chercheurs d'institutions de recherche agricole publiques en Zambie
Publicación de materiales de acceso libre: opiniones de los investigadores de instituciones públicas de investigación agrícola de Zambia
- 120 ***Open Access and Institutional Repositories in Agricultural Sciences: The Case of Botswana College of Agriculture (BCA)*** / Kebede Hundie Wordofa and Poloko Ntokwane-Oseafiana
- Le dépôt institutionnel et l'initiative d'accès ouvert à la connaissance des sciences agricoles: le cas de l'Université agricole du Botswana
La iniciativa de repositorios institucionales y acceso libre al conocimiento en las ciencias agrícolas: el caso de la Escuela Superior de Agricultura de Botswana
- 129 ***Fostering Open Access Publishing in Tanzanian Public Universities: Policy Makers' Perspectives*** / Frankwell W. Dulle and M. K. Minishi-Majanja
- Encourageant la publication en accès ouvert dans les universités publiques tanzaniennes: perspectives des décideurs politiques
Fomento de la publicación de materiales de acceso libre en las universidades públicas de Tanzania: desde la perspectiva de los formuladores de políticas
- 137 ***Juggling Copyright and Open Access in the 21st Century: A South African Case Study*** / Siphethile Muswelanto, Adèle van der Merwe, and Martie van Deventer
- Jongler avec le copyright et l'accès ouvert au 21^e siècle: un cas d'étude sud-africaine
Haciendo malabares con los derechos de autor y con el acceso libre en el siglo XXI: un estudio de casos en la República Sudafricana
- 145 ***Management of Intellectual Property Rights and Open Access to Research Results: The Case of CNRA*** / Kédro Sidiki Diomande
- La gestion de la propriété intellectuelle et l'accès libre aux résultats de recherche: cas du CNRA
Manejo de los derechos de propiedad intelectual y del acceso libre a los resultados de investigación: el caso del CNRA
- 148 ***Management and Dissemination of Scientific and Technical Information in Agricultural and Food Processing Research Institutions in Senegal: Main Lessons Learned with the FAC/IST Project*** / Massamba Cisse
- Gestion et diffusion de l'information scientifique et technique dans les institutions de recherche agricole et agroalimentaire du Sénégal: les acquis majeurs obtenus dans le cadre du Projet FAC/IST
Manejo y difusión de información científica y técnica en instituciones de investigación agrícola y de investigación en procesamiento de alimentos en Senegal: principales lecciones aprendidas en el proyecto FAC/IST
- 155 ***Initiatives on Open Access to Knowledge: Institutional Databases of the Research Institute for Development (IRD)*** / Mamadou Samaké
- Initiatives sur le libre accès aux connaissances: base de données institutionnelles de l'Institut de recherche pour le développement (IRD)
Iniciativas sobre el acceso libre al conocimiento: las bases de datos institucionales del Instituto de Investigación para el Desarrollo (IRD)

Sponsored by

