AUDITING THE INDIGENOUS KNOWLEDGE SYSTEMS (IKS) IN SOUTH AFRICA: CHALLENGES AND OPPORTUNITIES

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Abstract

This paper discusses the auditing of Indigenous Knowledge (IK) and Indigenous Knowledge Systems (IKS) in South Africa, and explores IKS policies and legislations, structures, centres and systems, activities, and research trends. The study targeted the Ministries of Science and Technology and Arts and Culture; NGOs; and Research Centres. Higher Educational Institutions (HEIs), including individuals and documented reports. We have applied largely qualitative (that is purposive and snowball) sampling techniques for data collection through document analysis and limited interviews. Snowball sampling was used in order to link with the key subjects of the study - through direct or indirect linkages - for face-to-face interviews. Review of the literature, particularly government documents, was very useful. Preliminary results show that an IKS policy exists and that most institutions base their internal policies/guidelines on the said policy. With various stakeholders in place coordination still lacks amongst them. There are various databases representing local research activities in the country, but efforts should be made to coordinate the entire research conducted in the country.

Keywords: Indigenous knowledge; Knowledge auditing, South Africa

Introduction

Indigenous knowledge (IK) can be defined in a number of ways. Semali and Kincheloe (1999: 3) claim that indigenous knowledge aims to:

> reflect the dynamic way in which the residents of an area have come to understand themselves in relation to their environment and how they organize that folk knowledge of flora and fauna, cultural beliefs, and history to enhance their lives.

The National Research Foundation defines it as a "complex set of knowledge and technologies existing and developed around specific conditions of populations and communities indigenous to a particular geographic area" (NRF 2005). The World Bank (1998) states that:

> IK is unique to a particular culture and society. It is the basis for local decision-making in agriculture, health, natural resource management and other activities. IK is embedded in community practices, institutions, relationships and rituals. It is essentially tacit knowledge that is not easily codifiable.

Kaniki and Mphahlele (2002:3) define IK as a cumulative body of knowledge generated and evolved over time, representing generations of creative thought and actions within individual societies in an ecosystem of continuous residence, in an effort to cope with an ever-changing agro-ecological and socio-economic environment.

In addition to the above definitions, IK is also referred to as local knowledge (Anand and Parashar 2006; Kargbo 2005: 200), traditional knowledge (IDRC, 1992; Ellen and Harris, 1996: 3), indigenous and traditional knowledge, (Kawooya 2006), ethno-ecology, folk knowledge, folklore, ecology, and knowledge of the land (Kargbo 2005: 200). This paper applies both IK and IKS to mean the same adopting Chisenga's (2002:94) application of the two terms interchangeably.

While the importance of IKS cannot be underscored (World Bank 2004), the mere danger of its extinction (Ikoja-Odongo 2004: 175) means that there is a major need for its audit. Thornton (2001: 129) posits that information auditing and mapping allows for the identification of current implementations, responsibility for the maintenance of data, and the discovery of areas in which improvements can be made or duplications eliminated.

Information auditing is the process of discovering and evaluating the information resources of organizations with the aim of implementing, maintaining or improving information management systems (Buchanan and Gib in Thornton 2001: 128). Ikoja-Odongo (2004:175) characterizes an information audit as a yardstick for ensuring conformity to standards. He further reiterates that auditing is meant to discover, check and verify the indigenous knowledge systems (IKS) within a given situation, and the environment's ability to deal with this knowledge. Botha and Boon (2003: 23-24) contend that auditing is a recognized management technique providing managers with an overview of the present situation in keeping with specific resource(s) and services within an organization. They further state that auditing "entails the systematic examination of the information resources and the management of these in an organization" (Botha and Boon 2003: 23).

However, the main purpose of an audit as highlighted by Thornton (2001) among others is to determine **what** the information requirements of an organization are, and **how** the information centre can best fulfil these needs. It also **evaluates** the effectiveness of an existing information system in order to determine effective ways of making their operation and services relevant. Management in this study covers the way IKS are managed in terms of the existing laws, policies, and structures in place, and whether there are any funding allocations for the same.

Although various audit related studies have been carried out (Ikoja-Odongo 2004; Kiplang'at 2004; Majanja 2004) and also by Ocholla and Onyancha (2005), the aim of this study was to map and audit indigenous knowledge systems and management practices in South Africa. Its main objective was to unearth and map current IK environment management practices. This objective was reflected in the following research questions:-

- Which IK systems are currently available in South Africa?
- Which national policies and strategies on IK currently exist in South Africa?

To get an entire overview of the current status quo of IK management practices, the study focussed on policies and legislation, structures

and governance, centre and systems, programmes and activities, and research and documentation in South Africa.

It is with this in mind that the study undertook a survey in order to identify what IKS exist, how much South Africa has done with regard to IKS, and whether there are any policies and legislations for the same. The survey was also intended to address the status quo of IKS in South Africa, and how they are managed.

Methodology

The auditing of various documents on policies, strategic plans and legislation relating to indigenous knowledge was executed. The study targeted policies and legislation, structures and governance, centres and systems, programmes and activities, and research and documentation in South Africa. The study was largely qualitative, and hence applied non-probability sampling techniques. The study targeted structures and governance, that is, the Ministry of Science and Technology, Centres and Systems such as NGOs, Research Centres/Higher Educational Institutions (HEIs), policies and legislation, programmes and activities, research, and documentation.

Different sampling techniques were used. Firstly, cluster sampling was applied. This technique is suitable when a researcher lacks a good sampling frame (Neuman 2000: 209). There were five clusters, namely government ministries, non-governmental organisations (NGOs), research institutions, higher learning institutions, and activities and research trends. It is from these clusters that we were able to apply the purposive sampling technique. The purposive sampling technique was applied to select centres or activities in the Ministry of Science and Technology and Arts and Culture that deal with IK. The centres or activities were drawn from the sampling frame provided by the Ministry of Arts and Culture. This largely formed a fair representation of cultural diversity and various levels of knowledge management development. Snowball sampling was used to enable us to connect with the key subjects through direct or indirect linkages for face-to-ace interviews.

Methods of data acquisition consisted of the following:

- Informal enquiries at institutions that deal with IKS;
- Formulation of a guided interview schedule that was largely derived from the research objectives and research questions;
- Documentation of the physical location of the sampled institutions to be visited;
- Actual field visits;
- Phone Interviews; and
- Observation and documentary review.

A literature review was carried out to inform the study. Among the reviewed sources were government legislation and reports, institutional policy documents, institutional curricula, dissertations and workshop reports.

Results and discussion

The following is an overview of IKS policies and legislations, structures, centres and systems, activities and research trends encountered in the auditing process.

Legislation and policies

South Africa's bid to promote, protect and preserve IK is demonstrated through various acts, policies and other documentation. For instance the constitution (Act No. 108 of 1996) mandates that everyone has the right to use the language and to participate in the cultural life of their choice, but no one may do so in a manner inconsistent with any provision of the Bill of Rights. Each person also has the right to instruction in their language of choice where this is reasonably practicable. It is for this reason the constitution recognizes eleven official languages, namely Afrikaans, English, isiNdebele, isiXhosa, isiZulu, Sesotho sa Leboa, Sesotho, Setswana, siSwati, Tshivenda and Xitsonga.

The South African population consists of the following groups: the Nguni (consisting of the Zulu, Xhosa, Ndebele and Swazi people); the Sotho-Tswana, who include the Southern, Northern and Western

Sotho (Tswana people); the Tsonga; Venda; Afrikaners; English; coloureds; Indians; and those who have immigrated to South Africa from the rest of Africa, Europe and Asia and maintain a strong cultural identity. A few of the Khoi (about 10,000) and the San (about 5000) also live in South Africa (Statistics South Africa 2005). (http://www.come2capetown.com/thecity/people_language/Khoi_San.asp)

Although English is the mother tongue of only 8.2% of the population, it is the language most widely understood, and the second language of the majority of South Africans. However, government is committed to promoting all the official languages.

The Arts and Culture Department has a heritage policy research and legislation that guides the department of heritage institutions. The department is in the process of developing a policy on intangible cultural heritage. The other players include:

- Department of Agriculture, directorate of Plant Production, has a policy on indigenous food crops. This policy conceptualizes and proposes possible solutions in regard to agricultural issues.
- The National Archives and Records Service Act mandate that recorded materials are collected, managed and preserved in whatever formats.
- South Africa has also a well-established intellectual property framework in place. Statutes are guided primarily by equivalent British and European Patent Convention legislation (Wolson 2001: 3).

The IKS policy launched by the Ministry of Science and Technology is the main driving and guiding factor where IKS is concerned. This policy is an enabling framework to formulate and strengthen the contribution of IK to social and economic development in the country (IKS Policy 2004). This policy seeks to recognize, promote, protect and develop IKS on its very own terms (NIKSO, n.d.: 3) In addition the Department of Science and Technology, together with other government departments and stakeholders, embarked on the implementation of the policy working closely with other Departments, for example Trade and Industry, Health and Environmental Affairs and Tourism. The three key deliverables that will emerge from this process are the recordal system for indigenous knowledge, an

intellectual property system that reflects IKS, and the appropriate positioning of indigenous knowledge based businesses within small business development (IKS Policy 2004: 5).

Structures and governance

They comprise the Department of Science and Technology (DST), Department of Arts and Culture, centres and systems, programmes and activities, and research trends.

The Department of Science and Technology (DST)

The Department of Science and Technology (DST) established the National Indigenous Knowledge Systems Office (NIKSO) which looks at IKS from a science and technology perspective.

The NIKSO functions as a Chief Directorate and has the following directorates:
1. Advocacy and Policy Development (APD)
2. Knowledge Development (KD)
3. Knowledge Management (KM)

Advocacy and policy development (APD)

APD's main focus is on the development of legislation and policy both at national and regional levels. The Directorate takes mobilization and management of a variety of stakeholders as vital while the IKS policy provides the collaboration between all stakeholders from government departments, science councils, tertiary institutions, NGOs, knowledge holders and also collaboration with other parts of Africa.

The key objectives of APD are:
- Development of legislation and policy
- Development of regional policy on protection of IK and IKS
- Managing international funding
- Advocacy
- Information dissemination
- Protection and promotion of IK and IKS

The APD directorate participates at international structures dealing with intellectual property e.g. Intergovernmental Committee (IGC) and World Intellectual Property Organization (WIPO). The directorate also coordinates the interdepartmental committee on IK of which its purpose is to provide advice and direction on matters relating to IKS within the Government of South Africa (NIKSO, n.d.: 5)

Knowledge development (KD)

The main objective of KD is to provide strategic leadership in the field of research and development on IKS. The directorate operates within the National Systems of Innovation (NSI) of the DST. It is also guided by the national priorities like HIV/AIDS, poverty, skills development and quality of life. The objectives of KD are:

- Facilitation of the positioning of IKS within NSI
- Coordination of IKS Research Agenda
- Establishment of IKS Chairs
- Establishment of IKS Centres of Excellence
- Establishment of IKS Laboratories
- Advancing international and regional partnership in research, scholarship and professional programmes.

The Directorate achieves these objectives by setting up national research agendas in collaboration with knowledge holder and practitioners, researchers, leaders, government departments, science councils and academic institutions (NIKSO, n.d.: 6)

Knowledge management (KM)

The KM directorate provides the infrastructure, capacity, facilitation and expertise for the development and management of effective solutions to advance IK and IKS within the economical and social environment. The main objectives are as follows:

- Development and implementation of an IKS knowledge management policy
- Development of an IKS databank
- Development and maintenance of databases
- Development of IK holders and practitioners
- Protection and promotion of IK and IKS

- Information dissemination of IKS

The KM directorate gives attention to the development, integration and management of all IKS related databases. The creation of databases will serve a wider purpose in providing and enhancing innovative capacity relating to trade marks, patents, copyrights, and geographical indicators for protecting IKS (NIKSO, n.d.: 7)

The NIKSO main objective is to coordinate Government's efforts in developing IKS. So far it has achieved the following:

- Currently finalizing the establishment of the IKS National Advisory Committee
- Supporting research in IKS through the NRF
- Meetings with a number of tertiary education institutions have been convened to conceptualize IKS Centres of Excellence on Curriculum Development
- IKS chairs have been established with higher education institutions
- An interface has been created between IK and the educational system by participating in the National Science Week
- Development of a strategy for public understanding and awareness on IKS
- A conceptual document has been developed for the establishment of a Recordal System

Recently, the Department considered proposals for the establishment of an audit of databases in various institutions (NIKSO, n.d.: 3).

Department of Arts and Culture

The Department of Arts and Culture seeks to preserve and develop South Africa's richly diverse cultural, artistic and linguistic heritage.

Its mission is to:
Develop and promote arts and culture in South Africa and mainstream its role in social development.

- Develop and promote the official languages of South Africa and enhance the linguistic diversity of the country.
- Improve economic and other development opportunities for South African arts and culture nationally and globally through mutually

beneficial partnerships, thereby ensuring the sustainability of the sector.

- Develop and monitor the implementation of policy, legislation and strategic direction for the identification, conservation and promotion of cultural heritage.
- To guide, sustain and develop the archival, heraldic and information resources of the nation to empower citizens through full and open access to these resources.

Centres and Systems

National Heritage Council (NHC)

National Heritage Council is mandated by the National Heritage Council Act, 1999 (Act No. 11 of 1999). The objectives of the council are to:

- Develop, promote and protect the national heritage for the present and future generations
- Co-ordinate heritage management
- Protect, preserve and promote the content and heritage which reside in 'orature' in order to make it accessible and dynamic
- Integrate living heritage with the functions and activities of the Council and all other heritage authorities and institutions at national, provincial and local level
- Promote and protect indigenous knowledge systems, including but not limited to enterprise and industry, social upliftment, institutional framework and liberatory processes; and
- Intensify support for the promotion of the history and culture of all our peoples and particularly to support research and publication on enslavement in South Africa.

The Council has the following functions, powers and duties as outlined in the
NHC Act of 1999:-
It must:-

- Advise the Minister on –
  i. National policies on heritage matters, including IKS, living treasures, restitution and other relevant matters; and

ii. Any other matter concerning heritage which the Minister may from time to time determine.

- Advise the Minister on the allocation of core funding to the declared cultural institutions
- Investigate ways and means of affecting the repatriation of South African heritage objects presently being held by foreign governments, public and private institutions and individuals
- Make grants to any person, organization or institution in order to promote and develop national heritage activities and resources Coordinate activities of public institutions involved in heritage management in an integrated manner to ensure optimum use of State resources
- Monitor and coordinate the transformation of the heritage sector, with special emphasis on the development of living heritage projects
- Consult and liaise with relevant stakeholders on heritage matters
- Generally support, nurture and develop access to institutions and programmes that promote and bring equity to heritage management
- Promote awareness of the history of all our peoples, including the history of enslavement in South Africa
- Lobby in order to secure funding for heritage management and to create a greater public awareness of the importance of our nation's heritage
- Perform such duties in respect of its objects as the Minister may assign to it (NHC website & Annual Report).

Agricultural Research Council

The ARC was established by the Agricultural Research Act No. 86 of 1990 (as amended) and is the principal agricultural research institution in South Africa. It is a schedule 3A public entity in terms of the Public Finance Management Act No. 1 of 1999, as amended by Act No. 29 of 1999.

The Act sets out the objectives of the ARC as "conducting of research, development and technology transfer in order to:

- Promote agriculture & industry;
- Contribute to better quality of life;

- Facilitate/ensure natural resource conservation" (ARC Strategic Plan 2007-2012).

This function is carried out through 10 research institutes whose activities are grouped under five divisions:
i. grain and industrial crops;
ii. horticulture;
iii. livestock;
iv. Natural Resources; and
v. Engineering, and sustainable rural livelihoods (ARC Strategic Plan 2007-2012).

The ARC is also responsible for maintaining national assets and undertaking programmes or rendering services that are required from time to time by the department and other stakeholders (ARC Strategic Plan 2007-2012).

A key programme cluster in this plan of action focuses on biodiversity, biotechnology and indigenous knowledge, with priorities relating to the development of new technologies and creating capacity to ensure sustainable use of these technologies. The plan also seeks to encourage sharing and transfer of technologies which can contribute to some of the core aspects of socio-economic upliftment on the African continent. The broad goals and objectives of this plan resonate with the ARC's core mandate and are therefore pertinent to the ARC strategy (ARC Strategic Plan, 2007 – 2012). In addition the institute paves way to use its expertise to contribute to the achievement of the seven MDGs and also focuses its research on:

- Vegetables, indigenous vegetables and flowers including medicinal plants, medicinal bulbs and fynbos
- Vegetatively propagated vegetables including potato, sweet potato, cassava, indigenous roots and tubers
- Suitable open-pollinated vegetable varieties (Research Highlights, 2006: 5)

Programmes and Activities

A programme is a group of activities directed towards achieving defined objectives and targets (NZHS 2000). An activity is a specific

task or grouping of tasks that provides a specialized capability, service or product based on a recurring government requirement (DoDEA 2004).

The operational definition of the aforementioned terms in this study will take Programmes to refer to those events that are regular and have been budgeted for. Activities on the other hand will mean events that are carried out of a necessity and inconsistent. These normally occur to fill a gap or create awareness. Table 1 cites examples of such.

Table 1: Programmes and activities

PROGRAMMES/ACTIVITIES	FREQUENCY	BODY RESPONSIBLE
Post-harvest activities through farmers days, seed fairs	-	Agricultural Research Council
Animal promotions plant	Annual	Department of Agriculture
On-farm conservation	Annual	Department of Agriculture
On-farm duplication project	Annual	Department of Agriculture
Annual Heritage Month	N/A	Department of Arts and Culture
Luthuli Lecture	Annual	Department of Arts and Culture
South African Museum Association	Annual	Department of Arts and Culture
National Science Week	Annual	Department of Science and Technology
Regional Workshop SADDC on protecting IKS	Annual	Department of Science and Technology
Interdepartmental Committee of WIPO	-	Department of Science and Technology
National Archives week	Annual	National Archives
Ngoma (zindala zombini) festival	Annual	National Archives
Heritage awards	Annual	National Heritage Council
Ubuntu	Annual	National Heritage Council
National Living Treasures	Annual	Indigenous Knowledge Systems of South Africa Trust
IKS festival	Annual	Indigenous Knowledge Systems of South Africa Trust
Heritage awareness	Regular	National Systems of Innovation

Research trends

Besides the various researches that have been carried out in this region, there is *Indilinga: African Journal of Indigenous Knowledge Systems* journal that aims at contributing to the ongoing, global discourse on indigenous knowledge (Mkabela 2004: iii).

Developments in IKS in South Africa since 1996 - when the focus on IKS was magnified and the research direction and emphasis became more inclusive of knowledge-holders and practitioners (although this still has a very long way to go to reach desired and appropriate levels), and issues of intellectual property and benefit-sharing started to be debated more vigorously - have given rise to other sets of challenges (Mosimege 2004: 81).

Many institutions have a database of some kind related to medicinal plants and traditional medicines, including the CSIR, National Botanical Institute (NBI), Medical Research Council (MRC), Agricultural Research Council (ARC), universities and technikons (universities of technology). Often, these databases have no reference at all to one another. Other institutions have other types of databases. The CSIR, for example, in addition to the databases on the bioprospecting work done by the Bio/Chemtek Business Unit has a database of the indigenous technologies carried out by the universities in the period 1996–1998. This database, which is in the process of being transferred to DST for further analysis in terms of access and availability, needs to be integrated with other databases to give a broader picture of IKS in South Africa (Mosimege 2004: 81).

An analysis of multiple databases in EBSCOhost (that is, Academic Search Premier, Business Source Premier, Eric, Masterfile, Medline, International Bibliography of Theatre and Dance), Thompson Web of Science formerly ISI, Access to Global Online Research in Agriculture (AGORA), Health InterNetwork, Access to Research Initiative (HINARI), African Journals Online (AJOL), Access to Global Online Research in Agriculture (AGRICOLA) reveal that there is a lot that has been researched in South Africa. There are quite a number of local databases dealing with IKS examples being:

- Southern African Bibliographic Information Network (SABINET)
- National Automated Archival Information Retrieval System

- National Register of Oral Sources
- National Register of Manuscripts
- National Register of Photographs
- Tertiary Institutions: Recordings and other databases have been made by the following universities – University of KwaZulu-Natal; University of Johannesburg; Databases on Provincial Audits at North West University – Mafikeng Campus, University of Limpopo, University of Venda for Science and Technology, University of Fort Hare, University of Transkei, University of the Free State – Qwa-qwa campus, University of Pretoria – Mamelodi Campus, University of Zululand (Mosimege 2005: 7).

Conclusion

As pointed out earlier in this paper, the term Indigenous Knowledge represents a broad definition of concepts such as local knowledge, traditional knowledge, ethno-ecology, ecology, folklore, local history, etc. The term became popular amongst academics in the late 1980s, early 1990s when international attention turned to *intellectual property laws* to preserve, protect, and promote traditional knowledge.

In 1992, the Convention on Biological Diversity (CBD) recognized the value of traditional knowledge in protecting species, ecosystems and landscapes, and began to incorporate language regulating access to it and its uses. It soon became apparent that implementing these provisions would require that international intellectual property agreements be revised to accommodate them.

In 1999 the World Intellectual Property Organization (WIPO) established a fact finding mission to consider the issues involved, not only with regards to biodiversity but also all forms of cultural expressions - including traditional knowledge, designs, music, songs, stories, etc.

The period from the early 1990s to the new Millennium was thus characterized by the rapid rise in the recognition of indigenous knowledge and indigenous knowledge systems in civil society. The high-level Brundtland Report (1987) recommended a change in development policy that allowed for direct community participation and respected local rights and aspirations. In the meantime indigenous

peoples and others had successfully petitioned the United Nations to establish a *Working Group on Indigenous Populations* that made two early surveys on treaty rights and land rights. These led to a greater public awareness and governmental recognition of indigenous land and resource rights, and the need to address issues of collective human rights, as distinct from the individual rights of existing human rights law.

Since then the collective human rights of indigenous and local communities has been increasingly recognized - such as in the International Labor Organization (ILO) *Convention 169* (1989) and the *Declaration on the Rights of Indigenous Peoples* (2007). Similarly, the *Rio Declaration* (1992), recognized indigenous and local communities as distinct groups with special concerns that should be addressed by states.

It is in line with these developments that this paper examined the auditing of IK and IKS in South Africa, and explores IKS policies and legislations, structures, centres and systems, activities, and research trends. The progress that has been made in South Africa since the early 1990s in terms of Government and other stakeholders' involvement in the promotion and development of indigenous knowledge and indigenous knowledge systems is given strong attention.

While South Africa has made good progress in the promotion of Indigenous Knowledge and has given support to Indigenous Knowledge Systems since the beginning of the new Millennium, much still needs to be done in this regard. The work currently being done by Government, NGOs, Institutions of Higher Education and individuals needs to be coordinated by a central body such as the Department of Arts and Culture or Department of Science and Technology in association with the National Research Foundation. Moreover, all past and current research work needs to be coordinated and made available via a centrally maintained open access repository to avoid duplication of research and funding. This is currently not the case but it is urgently needed.

References

Anand, S and Parashar, V. 2006. Integrating local and global knowledge through ICT: Implications for rural business and development. *IIMB(Indian Institute of Management Bangalore) Management Review*, 18 (1): 85-93.

ARC Strategic Plan, 2007 – 2012. [Online]. Available WWW: http://www.arc.agric.za (Accessed 3 June 2007).

Botha, H and Boon, J. A. 2003. The information audit: principles and guidelines. *Libri* (53): 23-38.

Chisenga, J. 2002. Indigenous knowledge: Africa's opportunity to contribute to global information content. *South African Journal of Libraries and Information Science*, 68 (1): 16-20.

Department of Arts, Culture, Science and Technology (DACST). 1996. White Paper on Arts, Culture and Heritage. [Online]. Available WWW: http://www.dacst.gov.za/arts-culture/artculwp.htm (Accessed 6 November 2006).

Department of Science and Technology (DST), 2004. Indigenous knowledge systems (IKS) policy. (A publication by the Department of Science and Technology).

Department of Science and Technology (DST). n.d. National Indigenous Knowledge Systems Office: Indigenous ways of knowing (Pamphlet: a publication by the Department of Science and Technology).

Department of Defense Education Activity (DoDEA). 2004. [Online]. Available WWW: http://www.dodea.edu/CSPO/definitions.htm (Accessed 9 March 2007).

Ellen R. and Harris, H. 1996. Concepts of indigenous environmental knowledge in scientific and development studies literature: A critical assessment. Paper read at East-West Environmental Linkages Network Workshop 3, Canterbury 8-10 May 1996: [Online]. Available WWW: http://lucy.ukc.ac.uk/Rainforest/SML_files/Occpap/indigknow.occpap_41.html (Accessed: 11 April 2007).

Ikoja-Odongo, R. 2004. Mapping and auditing indigenous knowledge capacity in Uganda. A paper presented at ProLISSA 2004. *Proceedings of the 3rd biennial DISSAnet conference, Pretoria, 28-29 October 2004,* pp. 173-190.

Indigenous Knowledge Systems (IKS) Policy, 2004. [Online]. Available WWW: http://www.dst.gov.za . (Accessed 12 March 2007).

Indigenous Knowledge Systems (IKS) Policy, 2006. [Online]. Available WWW: http://www.dst.gov.za (Accessed 12 March 2007).

International Development Research Centre (IDRC) and Dene Cultural Institute. 1992. Capturing traditional environmental knowledge. [Online]. Available WWW: http://www.idrc.ca/openebooks/644-6/ (Accessed 10 March 2007)

Kaniki, A. and Mphahlele, M. E. K. 2002. Indigenous knowledge for the benefit of all: can knowledge management principles be used effectively? *South African Journal of Libraries and Information Science* 68(1):1-15.

Kargbo, J. A. 2005. Managing indigenous knowledge: What role for public librarians in Sierra Leone? *The International Information and Library Review* 37:199–207.

Kawooya, D. 2006. Copyright, indigenous knowledge and Africa's University libraries: the case of Uganda. Paper read at the World Library and Information Congress: 72nd IFLA General Conference and Council. 20-24 August 2006, Seoul, Korea. [Online]. Available WWW: http://www.ifla.org/IV/ifla72/index.htm (Accessed: 11 August 2007).

Kiplang'at, J. 2004. Diffusion of information and communication technologies in Communication of Agricultural Information among Agricultural Researchers and extension workers in Kenya. PhD thesis, Richardsbay: University of Zululand.

Minishi-Majanja, M. 2003. Mapping and auditing information and communication technologies. *Education for Information* 21 (2003) 159–179.

Mkabela, Q. 2003. Introduction. *Indilinga: African Journal of Indigenous Knowledge Systems* 2 (1): iii-vii.

Mosimege, M. 2004. Indigenous knowledge systems in South Africa: perspectives from the Department of Science and Technology. *INDILINGA -African Journal of Indigenous Knowledge Systems* 3(1): 78-84.

Mogege M. 2005. Indigenous knowledge systems policy in South Africa: development of digital libraries and implications for benefit sharing and intellectual property. Paper read at the

Commons- Sense Conference at Wits University on 27 May 2005.

Mutula, S. 2002. The digital divide in Sub-Saharan Africa: implications for the revitalisation and preservation of indigenous knowledge systems. Paper presented at the SCECSAL – 15 Conference, 15-19 April 2002, Johannesburg.

National Heritage Council, 2006. *National Heritage Council Annual Report 2005-2006.* (A publication by the National Heritage Council).

National Research Foundation (NRF). 2005. Indigenous knowledge systems. [Online]. Available WWW: http://www.nrf.ac.za/focusareas/iks/ (Accessed 1 August 2006).

Neuman, W. L 2000. *Social research methods: qualitative and quantitative approaches.* 4th ed.-Boston: Allyn & Bacon.

Ocholla, D.N. and Onyancha, O.B. (2005) "The marginalized knowledge. An informetric analysis of indigenous knowledge publications 1990-2004.*South African Journal of Libraries and Information Science*.Vol.71.No.3, 247-248.

Semali, L. and J. Kincheloe. 1999. Introduction: What is indigenous knowledge and why should we study it? In: L. Semali and Kincheloe, J (eds). *What is indigenous knowledge? Voices from the academy*, pp. 3-58. New York and London: Falmer Press.

Southern Africa Research and Documentation Centre (SARDC) Website. [Online]. Available WWW: http://www.sardc.net/sardc.html. (Accessed 1 August 2006).

Thornton, S. 2001. Information audits. In Scammel, A. (ed.) *Handbook of information management*, 8th ed., Aslib, London, pp.129-43.

Wolson, R. A. 2001. Towards TRIPS compliance: South Africa's experience and legislative reforms. Paper presented at the Eastern and Southern Africa Multi-Stakeholder Dialogue on Trade, Intellectual Property Rights and Biological Resources in Eastern and Southern Africa - The Aberdares Country Club, Kenya 30-31 July 2001

World Bank. 1998. Indigenous knowledge for development: A framework for action.[Online]. Available WWW: http://www.worldbank.org/afr/ik/ikrept.pdf (Accessed 1 August 2006).

World Bank 2004. Mainstreaming indigenous knowledge. Online. Available WWW: http://www.worldbank.org/afr/ik/iknotes.htm (Accessed 26 July 2006).

Explanation to key legislative terms

- Green Paper: discusses the issues to be considered and examines alternative options
- White Paper: makes policy recommendations, taking into account feedback on the Green Paper
- Bill: attempts to translate the policy recommendations into law
- Act: sets down the law and is binding