

Indigenous Knowledge Systems



science and technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA





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FOREWORD:

MR MOSIBUDI MANGENA, MINISTER OF SCIENCE AND TECHNOLOGY

The Indigenous Knowledge Systems (IKS) Policy was adopted by Cabinet in November 2004, thus laying in place the first important milestone in our efforts to recognize, affirm, develop, promote and protect Indigenous Knowledge Systems in South Africa. Whilst unearthing the complexities and challenges associated with IKS, a process that took longer than anticipated, it provided those involved with extraordinary experiences, from which they emerged united in their admiration for the breadth and scale of South Africa's valuable indigenous knowledge resources. It also strengthened the spirit of collaboration between all stakeholders involved in its design, from representatives of government departments and science councils, to tertiary institutions, NGOs and, of course, individual knowledge holders.

The timing of the IKS policy is good. The activities of the SADC Region and NEPAD projects are gaining momentum, and the new policy provides the framework for collaboration with our counterparts in other parts of Africa. We can present a united front on problems facing both the region and the continent as a whole, such as biopiracy, benefit sharing and lack of appropriate recognition of knowledge holders. The policy also comes at a time when the debates at the World Intellectual Property Organization (WIPO), the Convention on Biodiversity (CBD) and other international organizations and agencies are coordinating processes and dialogue between developed and developing countries on Intellectual Property and Genetic Resources, and Traditional Knowledge and Folklore. The policy will play an important role in contributing to the integrity of these debates and will help chart the way forward on how South Africa views the interchange in the context of the contribution of knowledge holders to these developments.

The publication of the IKS Policy represents an important achievement in terms of engaging IKS in the drive to eradicate poverty. Whilst many intervention projects are involved in that noble cause, the IKS Policy provides a basis upon which indigenous knowledge can be used to make more appropriate interventions. We have great expectations that the adoption of this policy will lead to substantial improvements in the lives of many citizens and their living conditions. So it is extremely important that the Department of Science and Technology, together with other government departments and stakeholders, move forward firmly towards the implementation of the policy and all its provisions.

It is with great pleasure therefore, that I present to you the IKS Policy.

FOREWORD:

MR D HANEKOM, DEPUTY MINISTER OF SCIENCE AND TECHNOLOGY

Cabinet's adoption of the Indigenous Knowledge Systems (IKS) Policy is truly something to celebrate, both by the Department of Science and Technology and all its stakeholders. In recognizing IKS on its own terms, the policy seeks to facilitate a better understanding of the historical and cultural context, and worth of indigenous and local communities. It is a strong policy that brings together key drivers that are catalysts for the development and economic viability of holders, and practitioners of IKS. It is a policy which can respond positively to a rapidly changing environment, and through which indigenous and local communities and individuals can share equitably in the social and economic opportunities of South Africa.

The underlying fact is that indigenous knowledge has always been and continues to be the primary factor in the survival and welfare of the majority of South Africans. The policy seeks to recognize this, to affirm it, develop it, promote and protect the custodians and practitioners of this knowledge. The policy imperatives, namely the establishment of a National Office, the Advisory Committee, IKS Laboratories, etc., are major and important challenges and are consistent with the overall outcomes that the DST is seeking from the IKS policy: enhanced technological growth and the achievement of concrete benefits for holders and practitioners of IKS.

With a clear policy direction and an IKS Unit in place, these beginnings represent a significant achievement for the DST, but the hard work starts now. The Unit will be charged both with translating the policy directions we have set into motion, and with monitoring progress. The key to successful implementation will depend on how rapidly can we develop novel and more powerful indigenous technologies, market new products and services, and stay ahead of the pack.

Finally, I wish to take this opportunity to convey my full endorsement of the IKS Policy, which was a culmination of a remarkable effort by the DST, and express expectation that the policy will germinate a highly successful implementation of our goals.

FOREWORD:

DR ROB ADAM, DIRECTOR-GENERAL OF THE DEPARTMENT OF SCIENCE AND TECHNOLOGY

Indigenous Knowledge Systems (IKS) have attracted the attention of many people in both developed and developing countries. As policies and legislative frameworks are developed, the importance of both identifying and protecting indigenous knowledge is receiving increased attention from policy makers the world over. Countries such as India and Brazil have made significant strides already.

Despite the clear association with heritage and cultural tradition, indigenous knowledge is very much at the cutting edge. For example, the problem of how to define the ownership of intellectual property by a traditional community rather than by an individual or a company has exercised the finest legal minds and challenges the boldest policy makers. The role of indigenous knowledge in innovation in the pharmaceutical industry is also well-known. These complexities, together with the wide cultural range of stakeholders, have meant that the process of developing IKS policy by the DST has taken longer than expected.

The Department of Science and Technology, together with other government departments and stakeholders, will now be embarking on the implementation of the policy. This will require us to work closely with our sister Departments, for example Trade and Industry, Health and Environmental Affairs and Tourism. 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. This is indeed an exciting programme!

VISION AND GOALS FOR AN INDIGENOUS KNOWLEDGE SYSTEMS (IKS) POLICY FOR SOUTH AFRICA

Preamble

The Government of the Republic of South Africa registers its commitment to the recognition, promotion, development, protection and affirmation of IKS. This Policy is the product of extensive consultation, scholarly reflection, debate and participation from a range of stakeholders. The participation of practitioners and holders of Indigenous Knowledge (IK) has been of critical importance.

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EXECUTIVE SUMMARY

The Indigenous Knowledge Systems (IKS) Policy is an enabling framework to stimulate and strengthen the contribution of indigenous knowledge to social and economic development in South Africa. The main IKS Policy drivers in the South African context include:

- The affirmation of African cultural values in the face of globalisation – a clear imperative given the need to promote a positive African identity;
- Practical measures for the development of services provided by IK holders and practitioners, with a particular focus on traditional medicine, but also including areas such as agriculture, indigenous languages and folklore;
- Underpinning the contribution of indigenous knowledge to the economy – the role of indigenous knowledge in employment and wealth creation; and
- Interfaces with other knowledge systems, for example indigenous knowledge is used together with modern biotechnology in the pharmaceutical and other sectors to increase the rate of innovation.

To implement this policy, the following functions, institutions and legislative provisions will be required:

- An **Advisory Committee on Indigenous Knowledge Systems**, reporting to the Minister of Science and Technology;
- A **development function**; including, academic and applied research, development and innovation in respect of IKS;
- A **recordal system for indigenous knowledge and indigenous knowledge holders**; where appropriate, to pro-actively secure their legal rights;
- The **promotion of networking structures** among practitioners, to be located in the Department of Science and Technology; and
- Legislation to **protect intellectual property** associated with indigenous knowledge, to be administered by the Department of Trade and Industry.

CHAPTER ONE

1. INTRODUCTION

The Indigenous Knowledge Systems (IKS) developed and maintained by South Africa's indigenous peoples pervades the lives and the belief systems of a large proportion of the country's population. Such indigenous knowledge manifests itself in areas ranging from cultural and religious ceremonies to agricultural practices and health interventions. Indigenous knowledge (IK) is generally used synonymously with traditional and local knowledge to differentiate the knowledge developed by and within distinctive indigenous communities from the international knowledge system generated through universities, government research centres and private industry, sometimes incorrectly called the Western knowledge system.

Under apartheid, IKS in South Africa, as well as practitioners within such systems, were marginalized, suppressed and subjected to ridicule. This had profound negative effects on the development of South Africa's economy and society, resulting in the distortion of the social, cultural and economic development of the vast majority of its people. Across every measurement of socio-economic status and well-being, and across all age groups, geographical circumstances and both genders, indigenous people are severely disadvantaged. The disadvantages they face have the potential to increase and further entrench the disparity between indigenous and other sectors of society over the coming decades, unless greater effort is made now to redress the ongoing inequalities, not least of which is in respect of the knowledge systems of indigenous communities and specific knowledge traditions within these, such as guilds of traditional healers and specific knowledge traditions held by women within communities.

Integrating and celebrating African perspectives in South Africa's knowledge systems is not only a matter of redress. It can help create new research paradigms and mental maps, as well as enrich existing ones. Juxtaposed against the backdrop of centuries of oppression, exists an indisputable wealth of IK that has survived and in some cases, has even grown within the protective confines of African societies and communities. Much of the IK that has persisted has shaped and informed African thinking on issues such as art, music, religion and theology, governance, justice, health and agriculture etc. Personal and cultural identities, including social belief systems, have remained strong and vibrant through the repeated practice of observance of IK tenets, in spite of the very hostile socio-political environment characteristic of colonialism and apartheid. Frequently women have been the custodians of these bodies of knowledge.

The creation of this policy has involved a range of Government Departments. Moreover, a number of positive sectoral initiatives have already been undertaken. For example, the Department of Arts and Culture has spearheaded a national language policy and is investigating the promotion and copyright of indigenous music and art forms. Traditional Health Practitioners legislation has been developed by the Department of Health and mandates the establishment of a regulatory body to be known as the Traditional Health Practitioners Council, that will preside over the activities of approximately 200 000 South African traditional healers. The Department of Science and Technology has established a programme to support research on medicinal plants and other aspects of IKS at the National Research Foundation.

However the need for a broader all-encompassing policy framework has been recognised and a coordinating mechanism has been established through an Inter-Departmental Committee on IKS chaired by DST. This policy proceeds on the basis that IKS, by their very nature require a joined up approach. Complementary and contributory initiatives in other sectors are under active development and contribute to a fuller picture of the South African IKS environment. Clearly, it will not be possible to prescribe in detail to sectors that have unique features of their own. Nevertheless, it will be necessary to create several new cross-cutting functions to underpin the optimal performance of IKS in South Africa. The purpose here is to affirm, promote and debate IKS, and to create a sense of community across a diverse range of practitioners.

These functions are:

- A high-level advisory function to Government on IKS matters reporting to the Minister of Science and Technology;
- An IKS development function, including scholarship, research development, the maintenance of a recordal system for IK and the promotion of networking structures among practitioners, to be located in the Department of Science and Technology;
- Legislation and administration capacity to protect intellectual property associated with indigenous knowledge, to be administered by the Department of Trade and Industry;
- An establishment of an IKS Fund to support institutions that will assist Indigenous and local communities in the categorisation and characterisation of their biological resources, innovations, practices and technologies;
- A formal system to record IK must be created. Whether South Africa opts for placing IK in the public domain or attempts to secure a form of protection, a recordal system is of fundamental importance and has recently been endorsed by the UN Commission on Biodiversity.

The main IKS Policy drivers in the South African context include:

- The affirmation of African cultural values in the face of globalisation – a clear imperative given the need to promote a positive African identity;
- Practical measures for the development of services provided by IK holders and practitioners, with a particular focus on traditional medicine, but also including areas such as agriculture, indigenous languages and folklore; and
- Underpinning the contribution of IK to the economy – the role of IK in employment and wealth creation; and interfaces with other knowledge systems, for example IK is used together with modern biotechnology in the pharmaceutical and other sectors to increase the rate of innovation.

Each of these drivers is elaborated below and a lead Department is identified for each.

1.1 AFFIRMATION OF AFRICAN CULTURAL VALUES IN THE FACE OF GLOBALISATION

Lead Department: Arts and Culture

There is a clear need for recognition and protection of IKS in South Africa for cultural reasons. Two pervasive conditions tend to prevent such recognition. The first condition is peculiar to South Africa's political history and stems from the suppression of human rights based on race and culture. The knowledge institutions created during that era and before it are still in the process of being transformed to give expression to an African intellectual personality. The second condition derives from accelerating globalisation and affects all IKS the world over.

1.1.1 Redress

South Africa cherishes its hard won freedom from centuries of oppression of its indigenous people. It is within this context, that the national liberation process was pursued with visions underpinned by core constitutional principles and democratic values. Among these are human dignity, the achievement of equality, the advancement of human rights and freedoms, and the pursuit of social justice, non-racialism and non-sexism. Notions of social justice and equality within the South African constitutional context are not only core values and ideals; they are accompanied by obligations to undertake positive corrective measures of redress, generally and specifically. It is necessary to identify and enable policy instruments to give effect to provisions of the Constitution in respect of such rights.

Section 185 of the Constitution requires the establishment of a Commission for the Promotion and Protection of the Rights of Cultural, Religious and Linguistic Communities. The relevant Act mandating the Commission was signed into law in 2002. One of the primary objectives of the Commission is to promote respect for the rights of cultural, religious and linguistic communities. The Commission also has the power to monitor, investigate, research, educate, lobby, advise and report on issues concerning the rights of cultural, religious and linguistic communities. Clearly, a body that promotes or advises on IKS will need to cooperate closely with the Commission. This policy seeks to creatively advance the course of IKS within the context of these economic, social and cultural rights and freedoms.

1.1.2 Globalisation

In economic terms, globalisation implies the widening and deepening of the international flow of trade, finance and information within a single, integrated global market. The result of this process is the easing and reduction of nationally determined barriers, the expansion of capital flows and the escalation of technology transfer. The impact of globalisation on nation states has implications regarding their autonomy and policy-making capacities.

With South Africa's re-entry into the global arena, there are both opportunities and challenges for the management of IKS. The cultural implications of globalisation relate to the mixture and very often the imposition of different ideas and values to create a homogenous worldwide culture in the global village. Important modalities in this process are the economic interactions, mass media and other aspects of modern information technology platforms, which, for example, tend to accelerate the establishment of such homogenous cultural practices expressed in eating, singing, dancing, speaking, writing, etc, which constitute global village homogenisation.

An indicator of the serious effect of globalisation is the rapid attrition of language diversity across the world. It is estimated that there are 5000 to 7000 spoken languages in existence, of which approximately 100 disappear each year. Approximately 2500 of the remaining spoken languages are now endangered, 32 percent of these being African. Globalisation has been singled out as the major catalyst in their disappearance.

Threatened communities around the world have responded to the erosion of the building blocks of their cultures in various ways. One response to this has been the growth of an international IK movement that has influenced mainstream multilateral agreements from a human rights perspective. Examples of such agreements include the Convention on Biodiversity and the Plan of Action agreed on at the World Summit on Sustainable Development in Johannesburg. Another approach has been to assert that indigenous peoples of the world have the right to self-determination and in exercising that right, must be recognised as the exclusive owners of their cultural and intellectual property, for example as in the Mataatua Declaration of 1993. Both the African Renaissance and NEPAD (in their founding documents) have identified IK as a key continental imperative.

Emphasis will be placed on the promotion of international linkages in IKS from the perspective of sharing best practice and commitment to common objectives with partners whose interests converge with ours.

1.2 DEVELOPMENT OF SERVICES PROVIDED BY TRADITIONAL HEALERS

Lead Department: Health

According to the Traditional Medicine Strategy of the World Health Organisation (WHO), Traditional Medicine is widely used, in a rapidly growing health system with economic importance. In Africa, up to 80% of the population use traditional medicine to help meet their health care needs. In Asia and Latin America, populations continue to use traditional medicine because of historical circumstances and cultural beliefs. In China, traditional medicine accounts for around 40% of all health care services.

In developing countries, broad use of traditional medicine is often attributable to its accessibility and affordability. In Uganda, for instance, the ratio of traditional medicine practitioners to the population is between 1:200 and 1:400. This contrasts starkly with the availability of allopathic practitioners, for which the ratio is typically 1:20 000 or less. Moreover, distribution of such personnel may be uneven, with most being found in cities or other urban areas, and therefore difficult for rural populations to access. Traditional medicine is sometimes also the only affordable source of health care — especially for the world's poorest patients.

According to WHO, the most important issues affecting the practice of traditional medicine fall into four categories:

- National policy and regulatory frameworks – crucial to overall delivery;
- Safety, efficacy and quality - crucial to extending and regulating traditional medicine care;
- Access - making traditional medicine available and affordable; and
- Rational use - ensuring appropriateness and cost-effectiveness.

In recognizing the important de facto role of traditional medicine in South Africa, the Department of Health has promulgated the Traditional Health Practitioners Act. This Act addresses the categories listed above and proposes the establishment of a regulatory body.

There is a need to intensify Research and Development work in this area, particularly as it relates to recording and supporting traditional healers on safety and accessibility, among others.

1.3 CONTRIBUTION OF INDIGENOUS KNOWLEDGE TO THE ECONOMY

Lead Department: Trade and Industry

It is sometimes argued that the absence of additivity in innovations in IKS means that the knowledge remains basic and cannot produce much macro-economic growth. One explanation of the relatively static nature of IK is the absence of mechanisms and incentives for sharing knowledge within IKS. In the lower income agricultural sector, innovators tend to be indifferent, in the absence of public incentive and protection, to making their knowledge public. In the higher income health sector, they are secretive. In general, African countries have not put in place the incentive policies that can help achieve a continuous and additive innovation in IKS. Traditional structures appear also not to have self-corrected for this. Therefore, the growth-enhancing effects of IKS remain minimal, supporting the misconception of the IK as intrinsically static. Consequently, the creation of incentive mechanisms needs to be a cornerstone of a South African IKS policy.

However, despite the lack of organized incentives, particularly concerning traditional medicine and traditional agriculture, which represent significant economic activity in South Africa, IK still plays a pivotal role in sustainable livelihoods of a significant proportion of South Africa's population. There is a view, sometimes contested, that traditional agriculture is an ecologically tolerant and resilient crop production system that has demonstrated sustainability over long periods. It optimises production security through adaptation to the local environment. Crop security is assured through the development of a complex system involving such factors as diversity of crops, well-dispersed plantings, heterogeneous genetic resources, minimum tillage, and varying fallow, as well as sharing of food and labour. Such practices tend to be rational responses to local conditions and are logical adaptations to risks.

In South Africa, IKS are owned by and provide services to people who are prone to unemployment. Consideration therefore needs to be given to the role that IKS can play in employment creation. A proposed

IKS-based employment programme would complement or reside within the Community Based Public Works Programme being developed by Government. This will be one of the many projects that are aimed at utilizing IKS for poverty eradication.

In deploying the economic potential of IKS, we therefore need to consider three main factors:

- The creation of incentive mechanisms to promote IKS innovation;
- The promotion of IKS in the context of sustainable development; and
- The promotion of IKS as an employment generator.

1.4 INTERFACING WITH OTHER KNOWLEDGE SYSTEMS

Lead Department: Science and Technology

Interfacing with other knowledge systems provides critical opportunities for new products and services that cannot be under-estimated. International trade in genetic resources involves high economic stakes today. The sale of drugs based on traditional medicines alone amounts to over US\$ 32 billion a year. It has been estimated that by consulting indigenous people, bio-prospectors can increase the success ratio in trials from one in 10,000 samples to one in two, and that 'traditional' knowledge increases the efficiency of screening plants for medicinal properties by more than 400 percent. Without the input of indigenous knowledge, many valuable medical products used extensively today, would not exist. Prior to 1992, IK and resources were seen as the common heritage of mankind. There were no international (and in most countries national) laws regulating access to genetic resources. From the perspective of national competitiveness, in a world that runs increasingly on knowledge, systems of knowledge that are less accessible to others offer a potential competitive advantage. As a country, we cannot afford to neglect IKS in this regard.

The individualistic nature of intellectual property regimes creates several complications, when applied to local communities. They fail to take into account the fact that these communities have a holistic approach to their environment and do not separate the resources from which their livelihood stems into distinct economic and social assets. Furthermore, how does one define an innovation and a beneficiary in local communities, given the need to prove novelty and non-obviousness? In some cases, there are sub-groups within communities, such as traditional healers and crafts people who mediate and develop IK among themselves, rather than the broader community. The problem is further complicated in cases where the same or similar IK is used by different communities across the world.

These issues may be reconciled by working within the framework of TRIPS using different forms of intellectual property rights. These include geographical indications, the notion of community-based rights and sui generis forms of protection to complement the current system of Intellectual Property.

A related issue involving the current system of Intellectual Property of indigenous practices is the need to document them. In order to prevent IK that is already in the public domain from being patented as a new

invention in another country, it is vital to provide written documentation of such practices. This way, indigenous communities can challenge Intellectual Property Rights being granted to others for practices that are traditionally their own. The Traditional Knowledge Digital Library (TKDL) (India) of Ayurveda was established to prevent the granting of patents for unpatentable inventions on Indian TK, to break the language as well as the format barriers, and to establish modern classification, search and retrieval tools on TK. In addition, the creation of national, regional and international registries of IK could support benefit sharing among industry and local communities, as has been initiated in India. Recently, in South Africa, the CSIR reached a historic agreement with the San community on the sharing of potential benefits derived from an appetite-suppressing drug to be developed from the Hoodia plant. DST will create a framework that regulates such agreements being reached in a mutually beneficial manner rather than leaving the matter to serendipity and goodwill.

In order to secure rights to knowledge, a recordal system needs to be put in place where communities, guilds and other IK holders can record their knowledge holdings in order to assist their interest in future economic benefits and social good, based on IK.

The key elements of a system that will create positive synergy between South African IKS and the South African National System of Innovation are therefore:

- The creation of a legal benefit-sharing framework;
- The establishment of a formal recordal system for IK;
- Legislation to ensure minimum standards in Information and Material Transfer Agreements in respect of IK research;
- The promotion of IK links with the science base by means of targeted funding instruments; and
- Amendments to SA Patent Legislation to enforce IK prior art declaration.

SA Patents Law should be amended to formally require declaration of the use of IK or the transfer of materials arising from the indigenous use in the prior art declarations in respect of patents and designs. Failure to make such declarations would result in the loss of patent protection. Such declarations could be made retrospective with a reasonable period allowed for compliance. In addition, the use of Information Transfer Agreements (ITAs) and Material Transfer Agreements (MTAs) that conform to a minimum standard should be required for all researchers in the field of IK to ensure a basis for future benefit sharing in the absence of a recordal system.

The Department of Science and Technology will be responsible for IKS as they relate to innovation and interface with other knowledge systems, including research and development. The Department of Trade and Industry will deal with matters on intellectual property and IK Small Medium and Micro Enterprises (SMME) development.

CHAPTER 2

IKS AND THE NATIONAL SYSTEMS OF EDUCATION AND INNOVATION

2.1 INTRODUCTION

The relationship between IKS, the National System of Innovation (NSI) and the National Education System is an intimate and interwoven one. The IKS can grow and flourish in the dialogue and interaction with other knowledge systems. Conversely, neither of the two systems can flourish and succeed unless they are founded on the protection and promotion of IKS.

2.2 INTEGRATION OF IKS IN EDUCATION AND THE NATIONAL QUALIFICATIONS FRAMEWORK

The Constitutional principles of democracy, social justice and equity, equality, non-racism and non-sexism, human rights and human dignity underpin the values upon which the national education system is premised. The National Manifesto of Values for Education strengthens the above values by establishing values of accountability, the rule of law, respect, an open society and reconciliation as additional pillars upon which the national education system is founded.

The White Paper on Education and Training (1995) describes the fundamental goal of the national education and training policy as being essentially to enable all individuals to value, to have access to, and succeed in lifelong education and training of good quality. The key to sustainable technological capacity is identified as requiring a transformed, vibrant and effective educational system. This notion is built into the White Paper on Science and Technology (1996). The White Paper on Arts, Culture, and Heritage (1996) views education as part of culture, and acknowledges that culture itself is transmitted through education.

There is a fundamental parallel between the values mentioned above and those that govern IKS, which consist of people, the domains of knowledge and the techniques and technologies that drive the knowledge. It is therefore critical to ensure that the national education strategy is synergistic with and nurturing of IK. In the development of the New Curriculum Statements, there has been a strong drive towards recognizing and affirming the critical role of IK, especially with respect to science and technology education.

IK is dynamic in nature, and changes its character as the needs of people change. It also gains vitality from being deeply entrenched in people's lives. The transformation of education syllabi from a primarily content-driven approach to one of problem solving creates further impetus for the central recognition of IK. This will

further require that appropriate methods and methodologies for mobilising IK in various learning contexts be identified and used.

The National Qualifications Framework (NQF) embraces the principle of lifelong learning, and recognises that it is not only in schools, colleges and institutions where you can study and get a qualification. Accreditation by the NQF and related structures may be extended to many diverse forms of learning, and should include the validation of knowledge learned and applied practically in indigenous communities; knowledge which is most frequently transmitted orally. This will in turn create a policy instrument for the preservation and custodianship of the knowledge (especially in the area of biodiversity) of communities that are traditionally viewed as rural and economically poor.

The Department of Education should take steps to begin the phased integration of IK into curricula and relevant accreditation frameworks.

2.3 INTEGRATION OF IKS IN THE NATIONAL SYSTEM OF INNOVATION OF SOUTH AFRICA

The vision for South African science and technology is that of enabling socio-economic development by embedding our S&T strategies within a larger drive towards achieving a National System of Innovation (NSI) and is articulated in the White Paper on Science & Technology. In the NSI framework institutions, organisations and policies are stimulated to interact constructively in order to produce new knowledge and transfer of technologies. The eventual outcome of such innovation systems includes enhancing the quality of life, promoting competitiveness and developing human resources.

The very nature of IKS suggests that they would be fertile ground for innovation, i.e. IK systems are typically human centred, very diverse, applying technology of local origin with strong cross-linkages. A number of global examples exist where IK has successfully contributed to innovation systems, e.g. Japan, India, Singapore, Malaysia and South Korea. In almost all these cases however, IK has functioned as a separate but parallel system of knowledge that has not been integrated into the mainstream of knowledge. It is now necessary for IKS to become holistically integrated into the NSI.

Innovation within the South African IKS is a continuous process in response to changing community needs and conditions. The very act of knowledge or technology transfer in rapidly changing times may become an act of innovation in itself. Strong government intervention is critical to sustaining the momentum of development of the national IKS. The considered facilitation of appropriate private sector participation in generating economic benefit from IK is important in the historical South African context of conflict and exploitation between indigenous communities and the Apartheid regime.

2.4 NATIONAL RESEARCH AND DEVELOPMENT STRATEGY

Cabinet approved the National R&D Strategy in June 2002. Within this Strategy, there is a need to develop a clearly articulated research agenda for IK, based on the articulation of desired research priorities and outputs. There is also a need to develop clear knowledge validation frameworks that inform the education system.

In 2002, the total estimated national research and development expenditure was approximately 0,76% of GDP, approximately half of this investment was derived from the public purse. Funding IK research presents a unique opportunity for trans-disciplinary, multi-collaborative and participative research to enrich the NSI. Already significant programmes exist in the various Science Councils, in particular the Agricultural Research Council, the Council for Scientific and Industrial Research, the Human Sciences Research Council and the Medical Research Council. The Department of Science and Technology, via the National Research Foundation, has also begun to stimulate research in the Higher Education System by means of a focused programme designed for this purpose.

2.5 THE PRIVATE SECTOR

The synergies between the formal private sector and IKS are still largely unexplored. The role of the private sector in IKS is of particular importance in the following areas:

- The creation of businesses based on IK services resulting in long-term gainful employment opportunities in indigenous communities, thus assisting in poverty reduction;
- Forming partnerships with indigenous communities based on novel IK based products, for example in the pharmaceutical and music industries.

2.6 TRADITIONAL LEADERS

Traditional leaders are the formal custodians of the customary values of the communities, which are historically and constitutionally entrusted to them. The existence of traditional leadership in the development process of IK is therefore significant. In fact, no IKS development strategy will work if indigenous and local communities and their leaders are not directly and actively involved. In many other countries in Africa, it was only realised after repeated failures of local development experiments, that traditional leaders and traditional authorities constitute a valuable asset in the development process.

An agreed mechanism involving traditional leaders and the National Office on IKS will have to be established to ensure researchers gain access to Indigenous and local communities on a sound and sustainable basis. Access to the community in respect of IK will have to involve discussions with traditional leadership structures.

The Minister for Provincial and Local Government, in terms of section 154 (2) of the constitution recently published the traditional Leadership and Governance Framework Bill, 2003, for public comment. The Bill provides for the establishment and recognition of traditional councils, functions and traditional leadership, the statutory framework for leadership positions, dispute resolutions and the establishment of the Commission on traditional leadership disputes and claims.

2.7 WOMEN

In recent years, there has been a growing interest in IKS and the role women have played in the development and custodianship of knowledge. It is increasingly being recognized by researchers and grassroots workers alike, that in many communities women are the primary natural resource managers, and that they possess profound knowledge of the environment. Many related studies have shown that in circumstances of rapid change such as environmental crisis, changing economic activities, and government interventions, women play a crucial role in maintaining livelihoods, cultural continuity and community cohesion.

The participation of women from the very beginning and on all levels is crucial. Participation is understood to involve responsibility, trust and co-operation, not just consultation to help implement outside innovation more efficiently. This means empowerment for women, giving them more autonomy and decision-making power over their own lives and circumstances.

The contribution made by women as repositories of a large part of IK will be recognized. It is also essential that the fundamental role played by women in the applications used in food production, health care, maintaining familial cohesion and other areas of IKS is fully recognized and efforts made to strengthen their understanding in these areas.

It is envisaged that the SA Reference Group on Women in Science and Technology will create a focal point on Women and IK.

CHAPTER 3

GOVERNANCE AND ADMINISTRATION

3.1 SCOPE OF IKS IN GOVERNMENT

IK is an important area of focus for a number of government departments. Some key departments are: Agriculture; Arts and Culture; Science and Technology; Education; Environmental Affairs and Tourism; Health; Trade and Industry; Provincial and Local Government; Land Affairs; Water Affairs and Forestry; Sports and Recreation and Foreign Affairs. The role of DST has been to coordinate the different departments to ensure there is a coherent approach to matters relating to IKS. This was done through the establishment of an interdepartmental committee on IKS. It is proposed that this committee report through the DG of DST to the FOSAD Economic Cluster. The list of Government departments identified above is not exhaustive; other departments may be included in the committee as their role in IK becomes more clearly defined.

3.2 LEGISLATIVE AND ADMINISTRATIVE FRAMEWORKS

Major initiatives proposed, that require legislative and structural implications:

- The establishment of the National Office on IKS and its function within DST (Section 4.2).
- The establishment of an Advisory Committee on IKS, which will advise the Minister (Section 4.3); and
- The promulgation of legislation to protect IK possibly within a sui generis intellectual property regime to be administered by the DTI.

3.3 ACCREDITATION OF IKS HOLDERS

There may be existing opportunities within the National Qualifications Framework (NQF) for the accreditation of IK holders. The National Office on IKS within DST should address elements of IK that are not readily accommodated within the NQF. Every attempt should be made to harmonise the national accreditation process with international processes. DST and DOE will do these functions jointly.

CHAPTER 4

INSTITUTIONAL FRAMEWORK

4.1 RATIONALE FOR INSTITUTIONAL FRAMEWORK

Recognising that IKS requires active coordination and that regulatory measures are necessarily dispersed across government, it is proposed that:

- A National Office on IKS be established within the DST. The core functional areas of such a body should include the recognition and promotion of IK and knowledge systems: This office would provide the secretariat for the Interdepartmental Committee.
- An Advisory Committee on IKS with the mandate to advise Government on all matters pertaining to the recognition, promotion, development, protection and affirmation of IK and knowledge systems; reporting to the Minister of Science and Technology and administered by the DST.
- Capacitate Companies and Intellectual Property Registration Office (CIPRO) to administer the registration of knowledge by IK holders, to amend current legislation or to develop new legislation on the protection of IK, for example a sui generis system of protection. These instruments will complement existing legislation governing patents, trademarks, design, copyrights, geographical indicators, plant breeder's rights and animal breeder's rights by providing new protection to IK holders.

4.2 CREATION OF A NATIONAL OFFICE ON IKS

There is a need to establish a National Office on IKS. The functions of this National Office on IKS are:

- To provide public resources according to identified priorities;
- To develop an implementation infrastructure for programmes related to these functions;
- To establish mechanisms for the nature and extent of relationships between IK holders and the research community, and the regulation of standards for information and material transfer agreements related to the IK;
- To consider application for intent to access IK and IKS and conditions of fair and equitable benefit sharing;
- To maintain liaison with other Government Departments, foreign governments, IK holders in other countries, technical experts representing foreign agencies, and members of the public and private sector concerned with the protection of IKS;
- To leverage funding to IKS laboratories and centres, and practitioners/holders for the purpose of research and development;
- To maintain and disseminate information on IKS; and
- To advise indigenous/local communities/person on matters of dispute. This will be done in collaboration with traditional leaders and other IKS stakeholders.

In terms of setting direction for the National Office and further execution of its mandate, the following actions, amongst other things, should receive early prioritisation:

- Establishing the extent of IKS, the identity of IK holders and forms of social organization including the role of women;
- Establishing a national IK register;
- Auditing customary practices from the perspective of compliance with the Constitution;
- Identifying IK and IKS information held in the databanks of public, academic and research institutions, and promoting the fair and equitable use of such IK; and
- Investigating and identifying in consultation with indigenous communities the different forms of ownership of IK, the existing mechanisms for the protection of IK and IKS in terms of customary practices and laws of such communities; and designing systems and procedures necessary for recognition and protection of each form of ownership and benefit sharing principles and guidelines.

4.3 CREATION OF AN ADVISORY COMMITTEE ON IKS

The function of the Advisory Committee will be to act as an advisory body with representative stakeholder interests of institutions, communities, IKS holders and practitioners. The individuals appointed to the Advisory Committee should be leaders in their respective fields who are willing to extend advice to government on pertinent matters on IKS. The Advisory Committee will be charged with undertaking enquiries, studies and consultations with respect to the functioning of national IKS.

The Advisory Committee may:

- Conduct enquiries, studies and consultations consistent with its expertise and composition initiated at the request of the government;
- Take steps to ensure that the subjects and terms of reference of its activities are made public;
- Be provided with a secretariat and a budget with which to commission relevant activities, including policy research in support of its programmes;
- Provide policy advice to the Minister of Science and Technology who would then disseminate such information amongst his/her peers having an interest in IKS; and
- Consideration will be given to establishing a strong connection with the National Advisory Council on Innovation.

4.4 RELATIONSHIPS OF THE IKS WITH OTHER STRUCTURES

There should be defined mechanisms of co-ordination and accountability between the National Office on IKS, the Advisory Committee, the National Council on Innovation and the CIPRO (PTA), among others. Furthermore, it is envisaged that the proposed infrastructures will share a close operational relationship with other established structures.

IKS structures shall interact with appropriate national structures, NGOs, institutions, agencies and experts based on collaboration, partnership or co-operation with the purpose of pursuing its core functions.

4.5 THE ROLE OF RESEARCH INSTITUTIONS

Although some steps have been taken to embrace IK research more widely in the established research institutions such as Science Councils, with some notable exceptions, there remains a concern regarding the apparent lack of importance of IK in their core businesses. IKS research operates under the auspices of the National Research Foundation (NRF). A review of the effectiveness of the NRF programme has been recently undertaken.

The potential of the major research institutions to promote value addition to IK is immense. As has happened in the case of the CSIR and the San Hoodia Benefit Sharing Trust, legal arrangements can be reached that meet both national and community objectives.

4.6 THE IKS OF SOUTH AFRICA TRUST

The IKSSA Trust has been established by a range of stakeholders as an umbrella body representing IKS practitioners. Similar bodies exist in other countries (for example, Brazil) and play a useful role in representing stakeholder interests. Although governments may support such bodies financially, they are generally not statutory bodies because, by definition, a stakeholder organization obtains its mandate from its membership rather than by fiat.

CHAPTER 5

THE PRINCIPLES FOR FUNDING IKS

As with all knowledge systems, IKS requires dedicated public funding. It is also recognised that IK system outputs and IK policy objectives are strongly facilitated by appropriate funding instruments.

The key drivers for IKS as defined in Chapter 1 imply that there should be holistic co-ordination and collaboration of all stakeholders and resources in the IK system. There should therefore be appropriate IKS funding streams that support, amongst others:

- Curriculum development
- Small business development based on IK
- Public understanding of IKS
- IK practice and accreditation
- Research and development
- IK innovation
- IK protection
- IKS Centres.

It is expected that Government and its agencies will be the primary source of funding for the above functions, especially in the early phases of promoting and strengthening of IK system. However, other sources of funding will also be critical, both national and international in origin.

5.1 IKS FUND

The financing of IKS activities is strategically important for the growth of the economy. IKS must have a credible financing component in order to grow and develop. In the absence of a financing element, the extent of activities related to IKS will be severely limited. It is within this context that Policy proposes the establishment of an IKS Fund. The establishment of the Fund is underpinned by the broad-based principles of the National Empowerment Fund (NEF), namely, grants and incentives, project financing, venture capital and targeted investments. The IKS Fund mechanisms are designed to lead to greater levels of active involvement of IKS practitioners and holders in activities related to IKS in South Africa. In order to be effective in achieving the goals of supporting activities related to IKS and thereby contribute substantially to job creation and further growth of our economy, it is necessary to identify key priority areas of funding. In establishing the Fund, it should achieve as its principal objectives the following:

- To support institutions that will assist Indigenous and local communities in the categorisation and characterisation of their biological resources, innovations, practices and technologies.

- To provide a wide range of grants and incentives principally to cater for the medium- and long-term needs of agricultural and industrial enterprises, particularly in the rural areas, with emphasis on small and medium-sized industries. This intervention will seek to coordinate such financing with other programmes in order to maximise its impact.
- To fund linkages and access to existing programmes that will augment grassroots innovations by providing opportunities for experimentation, scaling up, prototype development and establishing relevant infrastructure, similar to GODISA, Tshumisano, NAMAC, and other DTI programmes. Co-operative ventures between indigenous and local communities, schools, industry and other community organisations are strongly encouraged to enhance employment outcomes.
- To support the establishment of independently based organisations such as Trust funds, to cater specifically for the needs of particular stakeholders (for example IKS Trust of SA and the San Hoodia Benefit Sharing Trust). These organisations may apply to the IKS Fund for financial support to engage in Research and Development work required by the Office on IKS.
- To assist financially in improving the capacity of grassroots innovators such as small-scale farmers, artisans, women and labourers in dealing with distant markets and utilizing various market and non-market opportunities for upgrading their skills, perspectives and resource base, and provide management support wherever necessary.
- To support tertiary institutions in the establishment of IKS Centres and IKS laboratories, and assist existing ones in the promotion, development and protection of IKS.

It is envisaged that all administrative and funding arrangements for the above objectives will fall under the control of the DST. The DST will periodically review these objectives in consultation with other Departments and stakeholders to ensure their relevance and usefulness. While the IKS Fund is expected to address the problem of access to finance for local and indigenous communities, it also takes into account funding from the private sector and other governmental structures and international structures. The IKS Fund will remain at the forefront for local and indigenous communities, aimed at creating an enabling structure in order to yield high developmental and financial returns.

CHAPTER 6

POLICY AND LEGISLATIVE REGULATORY FRAMEWORK: INTERNATIONAL AND NATIONAL IMPERATIVES

South Africa seeks to ensure that the benefits of ongoing innovation associated with IK accrue to its holders and practitioners while enhancing socio-economic development.

6.1 INTEGRATING IKS POLICY WITH OTHER NATIONAL POLICIES AND LEGISLATION

This IKS policy is informed by other policies, inter alia, policies around intellectual property, technology transfer, biotechnology, biological and genetic resources, food security, culture, heritage, education, etc. By extension, all IKS legislation will be informed by inter alia, legislation on intellectual property rights, biotechnology, biodiversity, genetic and biological resources.

The key government departments with which DST will coordinate the policy are:

- Trade and Industry (DTI);
- Arts and Culture (DAC);
- Department of Agriculture (DoA);
- Health (DoH);
- Environmental Affairs and Tourism (DEAT);
- Education (DoE);
- Foreign Affairs (DFA);
- Land Affairs (DLA);
- Sports and Recreation (DSR);
- Provincial and Local Government (DPLG);
- Water Affairs and Forestry (DWAF); and
- All their respective relevant statutory agencies.

A number of linked legislative programmes apply in respect of IKS and will be administered by several Departments. DEAT is in the process of implementing the Biodiversity Act. The Biodiversity Act provides for a National Authority that will grant approvals for access to, and collection and utilization of biological resources. The Department of Trade and Industry (DTI) will (see section 4.5) in drafting legislation consider all forms of protection of the rights of IK holders including sui generis regimes protection where appropriate. The Department of Health (DoH) has drafted both the Traditional Health Practitioners Act and the Medicine's Control Act. The Traditional Health Practitioners Act provides for the establishment of the Interim Traditional Health Practitioners Council of the Republic of South Africa, a regulatory framework to ensure the efficacy, safety and quality of

traditional health care services; to provide for control over the registration, training and practice of Traditional Health Practitioners. The Department of Arts and Culture through the National Heritage Resources Act can facilitate the development of IK in terms of intangible and tangible heritage. The DST will administer the structural provision for the National IKS Office, and the Advisory Committee for IK will be responsible for the coordination and advocacy of IKS.

6.2 PROTECTION OF IKS

Currently, South Africa has a well-defined system of intellectual property rights, which covers the following domains:

- Trade marks
- Patents
- Copyrights, and neighbouring rights
- Designs and integrated circuits
- Geographical Indications
- Plant breeders rights

South Africa is a signatory to TRIPS, and the protection of aspects of IKS within the context of trademarks is possible within this framework. Protection of IKS is also possible within a sui generis legislation in respect of the rights of IK holders.

Although collective ownership could be protected within the TRIPS framework, perpetual protection is not. Issues of benefit sharing, joint ownership of stakeholders and indication of country of origin where the materials are found are not adequately addressed. Protection of IKS is therefore feasible under TRIPS Agreement, but additional sui generis protection is required beyond this Agreement. Protection of trademarks, trade secrets, genetic and biological resources, cultural and heritage issues are feasible under the law of geographical indications. Trans-boundary issues can be entertained by means of bilateral and multilateral treaties to regulate these aspects.

Various strategies are possible in respect of IK protection and exploitation:

- India has launched a database of IK focused on Ayurvedic medicine in Sanskrit, efficiently placing this knowledge in public domain. This is in an attempt to prevent foreign companies from patenting naturally occurring medicines and foods that have been used traditionally in Indian communities. This Digital Library records details of up to 4,500 medicinal plants, in an easily searchable database to allow those applying for patents to check whether their 'invention' is actually unpatentable 'prior art'. This strategy limits the direct benefits to IK holders although the database itself can potentially generate revenues.
- Recently, the Council for Scientific and Industrial Research (CSIR) in South Africa and the SAN Community of the Kalahari concluded a Trust Agreement (the San Hoodia Benefit Sharing Trust) to share the benefits that are envisaged from the potential commercial success of a patent that followed research and development of a new technology related to a medicinal plant. In this case, the knowledge

is treated as an asset of the relevant community, which is transferred to an institution and developed further.

The database route can provide a key supportive mechanism for a national drive to utilize IK in the development of local pharmaceutical industry that aim at producing inexpensive drugs. It does not, however, empower communities as their knowledge is placed explicitly in the public domain. In India the existence of Sanskrit documentation on IK makes the population of such a database relatively straightforward. South Africa, however, does not have access to this type of verification mechanism.

South Africa should develop mechanisms for:

- 1) Recording of IK by IK holders;
- 2) Minimum standards for benefit sharing;
- 3) Agreement on public domain declaration of knowledge; and
- 4) Agreement on certification of IK holders and their IK rights.

6.3 GLOBAL IPR INFRASTRUCTURE

The key global mechanism for intellectual property protection is the World Intellectual Property Organisation (WIPO). The main objectives of WIPO are to protect and promote intellectual property (IP), and to build member state capacity to derive economic benefit from their intellectual property.

In Africa, The African Regional Intellectual Property Office (ARIPO) caters for former British colonies, recently joined by Mozambique and Angola, whilst the African Intellectual Property Organization (OAPI) caters for former French colonies. Both organs protect community rights and aim to build capacity for IP protection in member states.

The discourse on the protection of IKS and what constitutes property in an IK perspective has not yet informed the structure and function of the above institutions.

It is also clear that the political and economic policy directives that are needed to guide the implementation of IP protection (including IK protection) should not be de-linked from ARIPO and OAPI. For example, in Europe, the European Union (EU) provides an important policy directive for the functioning of the European Property Office (EPO).

Finally, South Africa, in partnership with other African countries, needs to investigate the feasibility of establishing unifying continental or regional bodies which not only address the protection and rights of an Intellectual Property System, but move beyond this to develop other appropriate instruments for IK protection.

CHAPTER 7

HUMAN RESOURCE DEVELOPMENT AND CAPACITY BUILDING

The IKS is recognized as a major national resource, and should therefore be integrated into the National Human Resource Development (HRD) Strategy, the National Skills Development Strategy, as well as the Integrated Sustainable Rural Development Strategy. Such integration will serve amongst other things to redress past imbalances.

7.1 IKS HUMAN RESOURCES AS A NATIONAL ASSET

IKS consists of a wide range of knowledge that has largely remained hidden from the mainstream of education, innovation, industry and commerce. IK holders, as custodians thereof, have enormous potential for innovation and commercialisation of indigenous knowledge.

7.1.1 Development of IKS Human Resource Capacity

In line with the HRD Strategy and the RDP principles, IKS human resource development will be made sustainable through a people-driven process and strategies implemented at local, provincial, and national levels using and building on existing infrastructure.

An IK Holder – Centred Development Strategy: IK holders must be meaningfully involved in the programme at all levels and especially in the decision-making process. They must be fully prepared through education and training for the various emerging roles, planning, decision-making, implementation, skills development, responding to new job opportunities and managing and governing IKS. Education and training should be available in a lifelong mode at various institutions and in the workplace.

Satisfaction of education and training needs: The IKS policy recognises the importance of accreditation of holders and practitioners of IKS. The Department of Science and Technology will need to develop in partnership with the Departments of Education and Labour to provide IK holders with the means to obtain specific education and training. The whole range of knowledge should be covered with a strategic focus on the development of Human Resources in Science, Engineering and Technology, Economic and Management Sciences.

Development and Economic Growth by establishing SMME's based on IKS: The establishment of SMME's, particularly in rural areas, that are based on research development, innovation and commercialisation of IKS will further serve to centre IK holders in the Human Resources development process. Since most IK holders reside in rural areas, this strategy will contribute to building the rural economy.

Like China and India, most research and development support from government and business in South Africa has been directed at bio-prospecting and pharmacological investigations, with product development being pursued by major pharmaceutical companies. There are few efforts directed at developing the current markets, their associated products, infrastructure and market players. There is an imbalance in support for traditional medicine, with most investment directed at seeking commercially useful chemicals within medicinal plants, while little or no investment is being directed at maintaining or increasing the benefits, which the current market is already delivering to society. The South African traditional medicines market could flourish on similar lines as that of China and India has, given the widespread demand for its utilization by the public. Furthermore, there are opportunities for better quality products within the broad spectrum of IKS and its related technologies linked to food and medicines, as livelihoods of local communities in Africa.

Particular attention should be given to the involvement of IK holders, women and youth in programmes involving entrepreneurship and business development. In addition, the process should involve the development of a flow of highly skilled researchers and IKS managers, who understand research and IK development as well as innovation, technology transfer and diffusion from the viewpoints of industry, government and academia. The essential distinguishing feature of IKS Human Resource Development is the goal of providing a holistic education and training; and entrepreneurship experience with integrated research, development innovation and commercialisation. This experience will be realised through special institution-industry-government and NGO co-operative efforts.

7.1.2 Legitimacy Of IKS Practitioners

Apartheid served to under-develop and erode IKS, which is now shrouded in mystery and regarded as non-legitimate by both Africans and non-Africans alike. Major problems in this regard require systemic measures to redress them.

7.2 LINKS WITH THE NATIONAL INNOVATION STRATEGY

The innovation and diffusion of technology, tools and knowledge, especially at a smaller scale, offers enormous potential for addressing problems of both rural and urban development, and poverty reduction. In rural areas, appropriate technology can contribute both to increased non-farm income generation, small-scale enterprise and enhanced agricultural productivity. There are risks in these areas, however. Technological innovations for small-scale rural enterprises may have negative environmental consequential pollution, heavy natural resource extraction and uncertain implications for rural inequality and poverty alleviation.

Environmentally friendly technologies together with IK can be used for both conservation and sustainable use of the natural resources, as well as reducing poverty. In addition, promoting applied research, the transfer and diffusion of innovations in appropriate technology; development of a more informed and balanced global

debate on the potential advantages and risks presented by the advances in certain specific fields of science and technology, for example biotechnology.

7.3 EQUITY THROUGH REDRESS

IKS development is a unique opportunity to recognise and redress inequities created by past policies in South Africa. Specific contributions to national goals will be achieved through:

- Training an increased number of blacks and females to follow careers in the various IKS fields;
- Promoting research capacity building in the universities. This will build on the experience gained from the Indigenous Technology Audits carried out in the mid 1990's and the research in IKS made possible through ring-fenced funding made available to the NRF by DST since 2000;
- The vast experiences of collaboration with industry make Universities of Technology a particularly useful partner in the IKS development process; and
- Supporting school based and adult basic education initiatives geared towards mobilising IK in multicultural contexts of learning.

7.4 PUBLIC UNDERSTANDING AND AWARENESS OF IKS

Heritage and cultural pride are important concerns of governments throughout the world. South Africa's bitter past and the culturally corrosive effects of globalisation makes it necessary to encourage improved IK and IKS awareness among the population as a whole. This will enable citizens to fully understand and appreciate the impact and potential impact of IKS on their daily lives. The DST will develop a strategy for public understanding and awareness of IKS.

CHAPTER 8

IKS INFORMATION AND RESEARCH INFRASTRUCTURE

South Africa must establish appropriate regulating mechanisms, which can develop the protocols and codes of conduct on the documentation and use of IKS resources. IK can then be documented, captured electronically and placed in the appropriate classification within the International Patent Classification (IPC) database, so that it can be more easily researched, retrieved and protected.

8.1 DATABASES

The methodology and standards used in the creation of IK databases should be harmonised with other international systems so that cross-referencing is possible. Eventually the creation of IK databases would serve a wider purpose in providing and enhancing its innovation capacity, bearing in mind, of course, the IK protection mechanisms described in Section 6.2. Common standards would enable the integration of widely scattered and distributed references on IKS in a retrievable form. This would act as a bridge between indigenous and other knowledge systems.

8.2 LIBRARIES

Libraries play an important role in IKS. Technical libraries are an essential resource for research workers and technologists, and must be constantly maintained and kept up to date. Moreover, by providing and proactively promoting appropriate displays, exhibitions and tours, by having a welcoming presence for indigenous cultures, and by actively acquiring material produced by and about indigenous peoples, libraries will provide essential services that promote an understanding of indigenous issues.

A new model of library service is required in order to:

- Facilitate indigenous and local community information access based on their own identified needs;
- Provide opportunities for indigenous and local communities to actively record and share their contemporary history, culture and language with both Indigenous and non-Indigenous peoples; and
- Use new technology creatively to support Indigenous and local community development.

Moreover, strategies must be developed for regional sharing of such resources and for supporting specialist libraries in particular subjects, based at the centres of excellence. General libraries can play an important role in adult education in general and in the public understanding of IKS in particular. It is necessary to ensure that the relevant implementers in this case are supported to provide the necessary infrastructure for purposes of advancing the knowledge and the related documentation.

8.3 MUSEUMS

There are over 400 museums receiving public money in South Africa. Municipalities in the provinces support the majority of these. However, some, particularly the larger ones, are funded nationally by DAC. South African museums fulfil unique research and service functions, particularly in the taxonomic and even forensic sciences.

Internationally, museums are important participants in IKS research. In South Africa, the research role of museums must be defined and encouraged. Museums can also play a positive and visible role in fostering public awareness of IKS. In this regard, the possibility of establishing an IKS museum with a strong public awareness orientation must be investigated.

8.4 ORAL FORMS OF IK

Oral forms of IK that are passed from generation to generation are under threat of extinction due to Westernization and technological development. Mechanisms should be put in place to retrieve and preserve oral forms of IK to contribute to national archive material. This will be done in consultation with the Oral History Project and the National Archives.

Through DAC, matters relating to oral forms of IKS will be researched, developed and promoted as part of South Africa's intangible heritage.

8.5 IKS LABORATORIES

One of the vital activities of the Department of Science and Technology has been to identify and promote frontline and priority areas of Research and Development (R & D) in various disciplines of science and technology. Acknowledging the vital role technology plays in the development of society, laboratories must be established with a two fold purpose, namely with the principal aim of developing indigenous technology and ensuring efficient absorption and adaptation of imported technology through alignment, linking to, and dovetailing to knowledge holders.

Special laboratories should be established for the development of IK, in addition to integrating IK research within existing research institutions. Indigenous technologies laboratories can serve as points of entry in the search for local options and broad-based approaches to the innovation of technologies and management of natural resources. The IK laboratories must support indigenous and local communities' activities that help to preserve and protect local knowledge, garner recognition and compensation for indigenous peoples' innovations and intellectual contributions. These laboratories will contribute to concrete activities at community level that promote the sustainable development of indigenous communities, research by and for indigenous peoples,

and capacity building to establish priority research topics and to direct research activities. In executing its functions, IKS laboratories will emphasize the relevance of IK and innovations related to resource governance and management at community level and:

- Will generate knowledge through interdisciplinary and participatory action research, case studies and promotion of community development experiences;
- Facilitate methods such as participatory technology development (PTD), community and culture based resource management (CCBRM) and area management planning (AMP); and
- Develop human resource through training and learning by enhancing capacity of research professionals, local technicians, resource managers and farmers, mainly from local and indigenous communities, on biodiversity conservation, community development, watershed management and cultural revival.

8.6 IKS CENTRES

It is proposed that the establishment of IKS Centres within existing structures such as universities, community centres, etc. will act as a facilitating and enabling mechanism, and their services, programmes, and projects should involve broad participation and collaboration of members of local and indigenous communities. The Centres for IK will focus their activities on preserving and using the local knowledge of indigenous people within borders of South Africa. The IKS Centres working in close proximity to local communities will be dedicated to facilitating collaboration between tertiary institutions, NGOs and IKS holders and practitioners working in development and promotion of IKS. It is proposed that the broad area of activities of the IKS Centres will be as follows:

- To collect, document, and disseminate information on various components of indigenous knowledge;
- To develop cost-effective and reliable methodologies for recording indigenous knowledge;
- To conduct training programmes and design materials on IK for development workers in IKS, practitioners and holders;
- To conduct interdisciplinary research on IKS;
- To promote the establishment of regional and national IK resource centres; and
- To assist in the formulation of policies and design technical assistance programmes based on indigenous knowledge.

CHAPTER 9

CONCLUSION

This IKS policy is historic in the sense that it affirms African cultural values in the face of globalization. Its provisions are intended to affirm, recognise, protect, promote and develop IK held by indigenous and local communities for the purpose of economic growth and social development. It is underpinned by the key drivers such as the contribution of IK to the economy and the interfacing of IKS with other knowledge systems.

This policy document is developed within the context of the National System of Innovation. It proposes the establishment of various institutional structures for the affirmation, recognition, promotion, protection, and development of IKS. For instance, the National Office on IKS will facilitate the interaction between various stakeholders and leverage funding for research and promotional work in IKS. The Advisory Committee will function as a consultative body and maintain connectivity with various institutions, communities and IKS holders and practitioners.

Given the establishment of the above structures and the crosscutting nature of IKS, this policy specifies the different roles that national departments working with IKS will be able to play. For example, DTI (IPRs), DoH (regulatory aspects with respect to traditional health practitioners), DEAT (biodiversity, access, benefit sharing), DOE (integration into the curriculum), and DAC (cultural and heritage aspects related to IKS), and DST (innovation and integration with other knowledge systems), and other government departments working in the area of IKS.

ABBREVIATIONS

ARIPO	THE AFRICAN REGIONAL INTELLECTUAL PROPERTY OFFICE
AU	AFRICAN UNION
CBD	CONVENTION ON BIOLOGICAL DIVERSITY
CBRM	CULTURE BASED RESOURCE MANAGEMENT
CIPRO	COMPANIES AND INTELLECTUAL PROPERTY REGISTRATION OFFICE
COMESA	COMMON MARKET FOR EASTERN AND SOUTHERN AFRICA
CSIR	COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH
DAC	DEPARTMENT OF ARTS AND CULTURE
DEAT	DEPARTMENT OF ENVIRONMENTAL AFFAIRS & TOURISM
DG	DIRECTOR-GENERAL
DoE	DEPARTMENT OF EDUCATION
DoH	DEPARTMENT OF HEALTH
DST	DEPARTMENT OF SCIENCE AND TECHNOLOGY
DTI	DEPARTMENT OF TRADE AND INDUSTRY
ECA	ECONOMIC COMMISSION OF AFRICA
ECOWAS	ECONOMIC COMMUNITY OF WEST AFRICAN STATES
EPO	EUROPEAN PROPERTY OFFICE
EU	EUROPEAN UNION
FAO	FOOD AND AGRICULTURAL ORGANIZATION
FOSAD	FORUM ON SOUTH AFRICAN DIRECTORS-GENERAL
GDP	GROSS DOMESTIC PRODUCT
HBU	HISTORICALLY BLACK UNIVERSITY
HES	HIGHER EDUCATION SECTOR
HRD	HUMAN RESOURCES DEVELOPMENT
IK	INDIGENOUS KNOWLEDGE
IKS	INDIGENOUS KNOWLEDGE SYSTEMS
IP	INTELLECTUAL PROPERTY
IPC	INTERNATIONAL PATENT CLASSIFICATION
IPRs	INTELLECTUAL PROPERTY RIGHTS
ITA	INFORMATION TRANSFER AGREEMENT
MCST	MINISTER'S COMMITTEE ON SCIENCE AND TECHNOLOGY
MTA	MATERIAL TRANSFER AGREEMENT
NACI	NATIONAL ADVISORY COUNCIL ON INNOVATION
NEPAD	NEW PARTNERSHIP FOR AFRICA'S DEVELOPMENT
NGO	NON-GOVERNMENTAL ORGANISATION
NQF	NATIONAL QUALIFICATIONS FRAMEWORK
NRF	NATIONAL RESEARCH FOUNDATION
NSI	NATIONAL SYSTEM OF INNOVATION
NSTF	NATIONAL SCIENCE AND TECHNOLOGY FORUM

OAPI	AFRICAN INTELLECTUAL PROPERTY ORGANIZATION
PTD	PARTICIPATORY TECHNOLOGY DEVELOPMENT
RDP	RECONSTRUCTION AND DEVELOPMENT PROGRAMME
SABiNet	SOUTH AFRICAN BIBLIOGRAPHIC & INFORMATION NETWORK
SACU	SOUTHERN AFRICAN CUSTOMS UNION
SADC	SOUTHERN AFRICAN DEVELOPMENT COMMUNITY
SAQA	SOUTH AFRICAN QUALIFICATIONS AUTHORITY
SETIs	SCIENCE, ENGINEERING & TECHNOLOGY INSTITUTIONS
SMME	SMALL MEDIUM AND MICRO ENTERPRISES
TKDL	TRADITIONAL KNOWLEDGE DIGITAL LIBRARY
TRIPS	TRADE RELATED INTELLECTUAL PROPERTY
UN	UNITED NATIONS
USPTO	UNITED STATES PATENT AND TRADEMARK OFFICE
WHO	WORLD HEALTH ORGANIZATION
WIPO	WORLD INTELLECTUAL PROPERTY ORGANISATION
WTO	WORLD TRADE ORGANISATION

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