

# Interfacing Indigenous Knowledge Systems and Access to Healthcare in SADC through the Millennium Development Goals

**Amos Saurombe**

<https://orcid.org/0000-0002-9393-0789>

University of South Africa

sauroa@unisa.ac.za

## Abstract

There are eight health-related Millennium Development Goals (MDGs), the mandate of which is to ensure access to affordable healthcare for poor countries, especially in Africa. These MDGs were supposed to be reached by 2015, but six years have now passed with little success being realised. The cost of affordable medicines remains the main predicament for poor African countries. The focus of this paper is limited to the poor countries of the Southern African Development Community (SADC), a part of sub-Saharan Africa. I have previously written on other measures that have been employed to improve access to medicine, for example pooled procurement used by a number of SADC countries. Unfortunately the vast rural nature of SADC member states makes it prohibitively impossible to reach every citizen, let alone convince them of the usefulness of Western healthcare. A number of scholars have written about southern Africa's riches in the area of Indigenous Knowledge Systems (IKS) that directly relate to healthcare. It is thus the objective of this paper to argue that both efforts of using IKS and the modern healthcare system can complement each other in the quest for the realisation of better healthcare and quality of life for the citizens of southern Africa. This paper starts with a motivation to indicate why IKS and access to healthcare are related. An analysis of the eight related MDGs follows as a way of measuring how far these have been realised post the anticipated date in 2015. In this analysis, it is critical to unearth how IKS can be used in the realisation of solutions to these shortcomings.

**Keywords:** Indigenous Knowledge Systems (IKS); Millennium Development Goals (MDG); healthcare; Southern African Development Community (SADC)



## Introduction

More than two billion people in low and middle-income countries (LMIC) lack adequate access to essential medicines and basic healthcare (Leisinger, Garabedian, and Wagner 2012). Southern Africa, the focus of this paper, forms part of this category of countries. It will take a long time for these countries to have the means, adequate supply and the know-how of using these modern medicines. It is thus important to seek answers from indigenous peoples' way of life in the present and the past in order to know how they have been surviving for the past generations. The remaking of development must start by examining local constructions, to the extent that they are the life and history of the people (Escobar 1995, 98). The indigenous communities are themselves a major stakeholder in this exercise. It is not just the responsibility of the national governments, the international community and non-governmental organisations (NGOs) to bring solutions to this challenge of access to proper healthcare. National governments in sub-Saharan Africa experience many budgetary constraints characterised by limited revenue but huge responsibilities. In some cases, especially those relating to medicines, national governments may have the resources to buy these medicines but the major challenge can be located at the level of administering the medicines as well as the use thereof. In some circles, especially rural settings, patients do not take their medicines well and at times, they do not take it at all. On the other hand, treatment needs complementing by a good diet and must be supported by proper healthcare. Increasingly, demands are placed on the pharmaceutical industry to contribute to improving access to healthcare for poor patients in developing countries. At the time of doing research for the writing of this paper in November 2018, the South African health department was experiencing shortages in the medicine supply chain. Chinese drugs suppliers had failed to meet the demand to the extent that some Indian suppliers needed to provide raw ingredients for medicine such as anti-retroviral drugs.

This paper seeks to establish the role IKS can play in improving access to healthcare in southern Africa. The paper discusses the different roles and responsibilities of key stakeholders. The paper concludes that the interface, partnership and collaboration between IKS and modern healthcare are key to improving equitable access to medicines in the region. This exercise is important in the realisation of a number of health-related Millennium Development Goals (MDGs) that are the subject of this paper.

## The Rationale for Improving Access to proper Healthcare

It is estimated that up to a third of the world population lacks access to proper healthcare, and of this figure, 50% are in parts of Asia and Africa. Sub-Saharan Africa contributes to most of this number. In addition, the average availability of generic medicines is only 38% in the public sector of these poor countries (Cameron et al. 2009). In all the SADC member states, the huge expenditure on medicinal healthcare is not sustainable. Moreover, this spending on medicines is often not cost effective: almost half of all the medicines are inappropriately prescribed, dispensed, or sold and patients do not adhere to about 50% of the medicines they receive. This challenge is often exacerbated by poor

nutrition, as mentioned earlier. In addition, reliance on subsistence farming has been negatively affected by persistent droughts and cyclones in the southern African region.

There is a strong argument that the disregard of the use of IKS by the vast indigenous rural populations in low and medium income countries is contributing to this challenge. There seems to be an over reliance on Western science and technology. The transfer of Western science and technology, often uncritically, has failed to transform the lives of the majority of people in the global south, and especially so in sub-Saharan Africa (Briggs 2013, 232). At the same time, there is a strong economic argument for the improvement of access to medicines through the use of IKS. In today's world, about 2.5 billion people struggle to meet their basic needs. Their lives are characterised by hunger, poverty and illness. These aspects are directly linked to IKS, if the heritage and experiences of these communities are put in perspective. Before looking into the role of IKS in the provision of access to medicinal healthcare, it is important to define some key terms that form pillars to this discourse.

## Conceptual Definitions

### **Indigenous Knowledge Systems (IKS)**

There is no universal definition of IKS. It is thus the intention of this paper to only use a definition that is related to the context and the scope of what is being discussed. Knowledge ownership is central to this definition. According to Noyoo (2007), IKS refers to the complex set of knowledge, skills and technologies existing and developed around specific conditions of populations and communities indigenous to the particular geographic area. IKS constitutes the knowledge that people in a given community have developed over time and continue to develop. In other words, the knowledge and skill developed in response to disease and sickness can point to the key of finding related solutions. In certain cases, diseases are unique to a particular geographic location, thus indigenous people of that locality develop the relevant skill and means to treat it over time. In some cases, IKS developed somewhere else or obtained from different parts of the world, may not be effectively applied in the African context, leading to failed projects (Swift 1996, 83). IKS informs methods of agriculture, food preparation, healthcare, education and training, environmental conservation and other related activities. Knowledge of IKS is passed on from generation to generation, while adapting to the natural changes of the local context and environment. It is characterised as a way of life. Many argue that it cannot be imported or imposed from outside. Local solutions to local problems are also characteristics of IKS that make it very relevant in addressing the issue of access to medicinal healthcare at hand. The criticism of IKS as being outdated and ancient is not valid, since it encompasses the available social, economic, philosophical, technological and learning components. The ability of IKS to evolve with the times makes it contemporary. In summarising the definition of IKS, Mercer et al. (2007) mention that "indigenous knowledge is considered to be a body of knowledge existing within or acquired by local people over a period of time through the

accumulation of experiences, society-nature relationships, community practices and institutions by passing it down to other generations.”

This paper calls for an end to the vilification of IKS, if its value is to be fully realised and exploited. IKS is at times wrongly looked at as “knowledge of the poor people” (Dei 2000, 120; Moahi 2012, 549). Vilification comes into the picture once comparison with modernity is biased. Modernity is often associated with Westernisation and in the context of this paper modern medicines become part and parcel of its manifestation among African communities. Around the late 1990s, tensions between indigenous and Western claims became evident (Briggs 2005, 99–115). Local knowledge rejected Western science’s claim to universality and its institutionalisation that it can be archived and transferred (Mahlangu and Gurutsa 2014, 152). Before long, communities preferred the use of Western medicines as opposed to indigenous ones. Western knowledge has been prioritised and there is an unwillingness to use IKS, ignoring local social, cultural and economic priorities (Mahlangu and Gurutsa 2014, 153). IKS was abandoned in pursuit of Western knowledge (Ocheni and Nwankwo 2012, 51).

## Related MDGs for Access to Medicines

The discussion of related MDGs is important for this paper, since it shows how important matters of access to healthcare are not just pertinent for the continent of Africa and the southern African region. This issue is a matter of global concern. Where the use of Western medicinal healthcare has failed to deliver the MDGs, the indigenous medicines must fill the gaps. In Africa, indigenous knowledge has been used in traditional medicine, agriculture and food production, engineering and ecological management for natural resources (Domfeh 2007).

### **Goal 1C: Halve, between 1990 and 2015, the Proportion of People who Suffer from Hunger**

Hunger remains one of the major challenges faced by southern African countries. The effects of drought, due to the El Niño phenomenon, have remained for over two decades. The El Niño phenomenon makes rain patterns unpredictable and often gives either too little or too much rain (Pomposi et al. 2018). Either way, the crops are damaged and communities remain vulnerable to hunger. The droughts of 2014, 2015, 2016 and 2017 made headlines across the continent and the total cost to the region is estimated at USD\$372 billion (Gumbi 2019). Hunger will always be followed by malnutrition and disease. It is thus important that the target to halve the number of people suffering from hunger becomes relevant in the fight against disease. Proper nutrition is a requisite for good immunity. Sadly, this target has not been met. The vast majority of the rural population in southern Africa survives on rations of food aid through specific government programmes or international aid agencies. It is thus the finding of this paper that the use of indigenous knowledge on the growing of food by the local population may go a long way in alleviating hunger and disease. Investing in the growing of indigenous food through the use of IKS can be one of the solutions to this challenge.

Local communities have knowledge of the right varieties of food plants that are resilient to droughts. Madzwamuse (2010) asserts that small-scale farmers produce crops through knowledge of environmental conditions, without the use of modern scientific knowledge. Through IKS, farmers can even replace one crop with another (Abid et al. 2016). This is an indication that rural communities which are vulnerable to climate change have strong adaptive capacities (Gyampoh et al. 2014). Through the use of IKS, some rural indigenous communities have reported that in order to cope with climate change, they depend on the use of irrigation, a diversification into more drought-resistant crop varieties, diversification into other crops and timing the planting period to coincide with the onset of rains (Gwimbi 2009).

#### **Goal 4: Reduce Child Mortality**

IKS can be used to reduce child mortality (Muzvidzwa 2018). In remote communities, medical treatment is often not immediately available for protracted periods of time or in case of emergencies. In these remote and extreme climatic environments, women are sometimes required to use their own traditional methods for the prevention and treatment of illnesses, injuries and diseases, and significantly, in caring for mothers and children (Ravna 2019). Child mortality has been identified as a direct result of poor healthcare in many African countries. Children born in poverty and malnutrition are not likely to reach their fifth birthday. According to MDG 4, the target was to reduce the under-five mortality rate by two-thirds, between 1990 and 2015 (WHO 2013). This target has not been met, despite a number of interventions both by national governments and international aid agencies. Globally, the number of deaths of children under five years of age fell from 12.7 million in 1990 to 6.3 million in 2013 (WHO 2013). This is not good enough. In many rural communities of southern Africa, the battle to save children from avoidable death is not being won. It is a major concern for international aid and health agencies. The use of IKS in reducing child mortality is worth exploring. The use of fortified, traditional food has been proven useful in the preservation of life, if utilised at the time of being born. If this knowledge is used correctly, its impact can be significant.

#### **Goal 5: Improve Maternal Health**

The goal to improve maternal health concerns the effort of good healthcare during pregnancy and soon after birth. This goal is closely related to Goal 4 above. The health of the mother and child is critical for the household. In an indigenous African context, the father is called upon to provide for his family that consists of the wife and children. This focus is of critical importance for any health department of a country. Maternal health is also a major focus of IKS, in that it interrogates some of the traditional methods that were employed in local communities to make sure that the life of both the mother and child is safeguarded, even before birth. Thus, the desire to reduce the maternal mortality rate by three quarters between 1990 and 2015 was critical; however, this target has not been met. Many desperate mothers would even try to go to neighbouring countries where better healthcare is available, all in the hope of saving their children.

This has become very common in the SADC region where poorer countries' citizens flock to South Africa to seek medical care.

Under this target of Goal 5, the quest to achieve universal access to reproductive health by 2015 has not been met. There is a need to seek answers from somewhere. Universal access to reproductive healthcare will not be achieved without consideration of IKS for the local communities where these efforts are being directed. Traditional methods of reproductive health practice remain relevant even now in many communities. It is time that these methods get the recognition they deserve.

### **Goal 6: Combat HIV/AIDS, Malaria and other Diseases**

The HIV/AIDS pandemic is a global catastrophe with its epicentre being felt in parts of sub-Saharan Africa. Other diseases, like malaria, and epidemics, like Ebola, wreak havoc on rural communities of some parts of sub-Saharan Africa. Malaria claims many deaths on the continent of Africa. The international community, through its United Nations Agencies, has made great strides but the adverse effects of diseases in South Africa remain a reality. A look at IKS may provide much needed insight on how the communities can be given the opportunity to address the challenges they face on a daily basis. IKS methods of prevention of disease need to be seriously considered. In most cases, Western medicines and drugs focus on the treatment of the disease. This is a good intervention, but one needs to consider that prevention is better than cure. It is also less costly.

Goal 6, to halt and begin to reverse the spread of HIV/AIDS, is a monumental task. The stigma associated with the disease can only be removed by forms of intervention that take into consideration the way of life of the communities where the diseases are found. The spread of HIV in most of these communities is as a result of unprotected sexual encounters. Faithfulness to spouses and single partners can be traced to African values which, if they can be revisited, may hold some solutions to this disease epidemic.

According to Goal 6, the target to achieve (by 2010) universal access to treatment for HIV/AIDS for all those who need it, has not been met. A number of countries in sub-Saharan Africa remain at the periphery of this access to the required anti-retroviral drugs. Where drugs are available, it is at the mercy of donors. This means that some national governments are still not able to provide for this critical treatment. If patients miss or skip some of their chronic drugs like ARVs, it weakens the immune system further to the extent that the patients may need to change the type of drugs altogether. Even where governments are capable of financing the cost, they at times find it hard to source the drugs from pharmaceutical companies that are not based on the African continent. In other words, African countries lack the adequate capacity to manufacture the drugs required to fight diseases. Most governments even lack the innovative and decision capacity to institute compulsory licensing as a way to ease the unavailability of the essential drugs.

The introductory part of this paper mentioned that one of the biggest challenges is a lack of expertise in the administration of the drugs. In many cases, drugs are wrongly prescribed and patients are not given the required support system for the drugs to work effectively. Treatment needs to be complemented with proper nutrition for it to be optimally effective. High levels of illiteracy make it impossible for out-of-hospital patients to follow simple instructions on how to administer the drugs.

Goal 6 states that there is a need that by 2015, we have begun to reverse the incidence of malaria and other major diseases. This has not been an easy task; a closer look shows that in some areas, the incidence of malaria and other major diseases is on the rise. Due to climate change that results in global warming, malaria-prone areas are now on the increase. Two years ago, a number of patients from Johannesburg were diagnosed with malaria without having travelled to any malaria-prone area. The realisation is that due to climate change, the weather and environment have become conducive for the malaria mosquitoes to breed in areas that were in the past not recognised malaria zones. In many southern African countries, the incidence of avoidable epidemics like cholera is evident. There is a cholera outbreak each year in some communities of southern Africa member states. Some countries are worse off now than they were at the end of colonialism in terms of healthcare. This is a major concern and obstacle in realising the set out MDGs.

### **Goal 7: Ensure Environmental Sustainability**

The issue of environmental sustainability is critical for the livelihoods of indigenous communities. Indigenous knowledge has made local communities live in harmony with their environment for long periods of time (Iloka 2016). Indigenous communities have adjusted their livelihood strategies to adapt to gradual change for centuries, but new global pressures have significantly changed people's social, economic, political and environmental contexts (Dekens 2007). Most of these communities depend on their local environments for food, shelter and medicine. A study of the Kalahari shows how local and scientific knowledge can be combined to develop strategies to reduce land degradation, or at least adapt to it in meaningful ways (Reed et al. 2007). Thus, environmental sustainability cannot be imposed from the outside for it to work optimally. The rural poor should have a voice in issues affecting them (Chambers and Conway 1991). The local communities need to commit to the idea of preservation of the environment for their benefit and that of their future generations. Most indigenous communities still practise subsistence farming, with most of their produce going into providing for their food needs, with only a few being able to sell for revenue generation. It is ironic that the effects of global environmental degradation are being felt locally. Through IKS traditional communities learn to live with their changing environments (Stigter et al. 2005). There is proof that local indigenous knowledge has contributed to improving forest management and in promoting biodiversity conservation, by constantly adapting to and managing the challenges associated with the tensions between forestry and cropping practices (Rerkasem, Yimyam, and Rerkasem 2009).

Some industrialised nations continue to be ignorant of the effects of global warming. The former American President, Donald Trump, even exhibited denialism views on climate change. President Trump rolled back environmental regulations his predecessors had put in place to control pollution that leads to climate change. He pulled the United States out of the Paris Climate Accord (Davenport and Landler 2019). He retreated from the USA commitments to the Paris Accord, rendering the agreement to tackle climate change a futile exercise if the world's biggest industrialised economy is not a party to the convention. Trump's administration sought to undermine the very science on which climate change policy rests. Other nations, like China and India, continue to pollute the environment, mostly being motivated by profits that continue to fuel their industrial revolution of being characterised as the world's factory.

The current phenomenon of cyclones hitting southern Africa and other parts of the globe can be linked to global warming, of which the Western and developed countries are the culprits. They stand guilty, especially of emitting greenhouse gases into the atmosphere. Global warming is wiping out indigenous varieties of food, vegetation and fauna that also act as medicinal plants. Through IKS, farmers plant drought-tolerant or early-maturing crop varieties, they apply mixed cropping, crop switching and tree planting, which are normally practised by livestock farmers who plant shade trees to protect their livestock during heat stress (Tambo 2016). This knowledge is no longer as valuable in producing the expected results, since the ever-changing weather patterns make plant variety choices unpredictable. Indigenous communities are known for tapping into their indigenous knowledge to survive when their communities are excluded from modern developments that include road, communication and general modernity. In 2002, some of the indigenous residents of Tikopia Island in the Solomon Islands survived the devastating effects of Cyclone Zoe by using age-old indigenous practices of traditional housing that included taking shelter under overhanging rocks on higher ground as the cyclone struck (Kelman 2005; Vettori and Stuart 2004).

Maize is not indigenous to southern Africa; it came through European imperialism. A study shows that after the persistent failure of good maize harvests, some rural communities in Mutoko, Zimbabwe have made a switch to indigenous varieties of millet and sorghum and their harvests have improved. This supports the assertion of Jianchu et al. (2007) that local communities have developed adaptation measures relevant to their cultural values to lessen the impacts of climate threats on their livelihoods. Local communities have developed culture-based mechanisms of adaptation to harsh weather conditions that negatively impact their livelihoods (Jianchu et al. 2007). The planting of millet and sorghum varieties is also perceived as spiritual and cultural among indigenous farmers. The local traditional beer brews are always made from these crop varieties. These interventions support environmental sustainability too. The residue from these crops is left to dry and decompose in the fields, making natural manure and fertilizer for the crops that are grown the following year. In another study from the Chagaka area, Malawi farmers have always utilised a variety of traditional aspects in order to enhance their farming practices. Additionally, Gyampoh et al. (2014) observed

that rural communities that are vulnerable to climate change have strong adaptive capacities. Having visited the cyclone hit Chimanimani, the author could observe how communities are rebuilding their lives and are already planting plants and tree varieties that can provide food as well as shield them from future adverse weather conditions.

The reality of adapting to drought, scarcity of rain and decreased production of crops is accomplished through community-based measures to sustain human livelihoods (Gyampoh et al. 2014). In the rural Chimanimani area, under Chief Saurombe, the cultivation of a communal field or farm (Zunde) under the leadership of the local, traditional chief is one of the community-based measures of sustaining human livelihood. This arrangement allows community members to have their own fields to grow crops but also contribute to the communal farm. In the communal farm, the planting of indigenous varieties has been a source of success for this project. This project becomes successful also due to the fact that indigenous communal knowledge is exhibited jointly by members of the community. The produce derived from the communal farm is stored in granaries (Dura) for the benefit of the community in times of droughts and famine.

### **Goal 7C: Halve, by 2015, the Proportion of People without Sustainable Access to safe Drinking Water and Basic Sanitation**

Water has become one of the most precious commodities in the world. Nearly 80% (4.8 billion) of the world's population has no access to water and they stay where the biodiversity has negatively threatened the availability and use of water (Mahlangu and Garutsa 2014). Despite southern Africa having access to rivers, lakes and dams, clean water remains a scarce commodity. Pollution is the biggest challenge. Some parts of southern Africa are considered water-scarce regions. In South Africa, there is always a region that is suffering from water shortages at any given time. Cape Town and the surrounding areas had their fair share of water shortages. There was a realistic fear that Cape Town would run dry at some point in 2018. The drought has now affected the Eastern Cape region of South Africa, especially Grahamstown, which has completely run dry.

The lack of clean water prevents people from practising basic hygiene like the washing of hands before eating, after using the toilets and bathing of their bodies. Grey and Sadoff (2007) define water security as the availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production coupled with an acceptable level of water-related risk to people, environments and economies. This means, in some places, water maybe abundant but it may not be of acceptable quality; and thus unfit for health, livelihoods and ecosystems. Furthermore, Campana (2011) defines water security as “the capacity of a population to access sufficient water to meet all needs and to limit the destructive aspects of water. It involves both the productivity and destructivity of water.” Some of the rainfall patterns in southern Africa have these productivity and destructivity elements. Less water leads to less productivity, while too much water destroys the productivity of farming and livelihoods. The recent cyclones

of Idai and Kenneth that affected Mozambique, Malawi, Tanzania and Zimbabwe are clear examples. Immediately after the cyclone, despite the abundance of water through the flooded rivers and waterways, this water was not fit for any use resulting in those trying to use it suffering from various communicable diseases, as will now be discussed. In some places, clean water could be abundant but may not be accessible.

The lack of water security will give rise to water borne diseases that can be linked to a number of sicknesses and death. These include diseases like diarrhoea, cholera, and other serious illnesses such as Guinea worm disease, typhoid, and dysentery. Malaria-transmitting mosquitoes breed well in stagnant water bodies. 90% of malaria cases happen in sub-Saharan Africa and contribute to a huge number of deaths. These diseases appear on the horizon in some parts of southern Africa annually, but each time the efforts at dealing with them are mostly reactionary as opposed to preventative. Improving global access to clean drinking water and safe sanitation is one of the least expensive and most effective means to improve public health and save lives (Montgomery and Elimelech 2007). Going around curing disease and avoiding death is more expensive than the provision of clean water in the first place. In sub-Saharan Africa, water and sanitation services are still severely lacking. As a result, millions suffer from preventable illnesses and die annually. Over a decade ago, conditions were most severe in sub-Saharan Africa, where 42% of the population was without improved water, 64% was without improved sanitation, and deaths due to diarrhoea diseases were greater than in any other region (Montgomery and Elimelech 2007). The expected improvement has not been impressive.

The World Health Organisation (WHO 2013) declared the period from 2005 to 2015 as the decade of water. The main goal was to establish a framework to eventually provide full access to water supply and sanitation for all people. As evidence that this goal has not been forthcoming, a study of 2013 showed that nearly 60% of infant mortality was linked to infectious diseases, most of them water, sanitation, and hygiene-related (Alsan and Goldin 2019). The situation has not improved to date. A study conducted by the Pacific Institute estimated that if no action is taken to address the lack of water, sanitation, and hygiene, as many as 135 million preventable deaths will occur by 2020 (Gleick 2002). In many rural communities, the collection of water remains the sole responsibility of women and children. In some cases, they walk long distances to fetch water. The long distances travelled also increase the chances of contamination, especially when the containers are not sealed. Most of the containers used are open on the top and are carried on the head by women.

In many of these developing countries of sub-Saharan Africa, a lack of financial resources and low prioritisation of water and sanitation constrain both the maintenance and expansion of services. The existing infrastructure is already under strain, especially in the urban areas. It is thus important to ask the pertinent question: What is the role of IKS in the provision of safe drinking water for the vast rural communities of southern Africa? Local knowledge systems provide a sound platform for the conservation and

management of water in rural areas (Mahlangu and Gurutsa 2014). Nearly a decade ago, at least 14 million rural and suburban people in South Africa did not have access to running water (Molobela and Sinha 2011). These figures account for at least a quarter of the population. Like most southern African countries, South Africa is a water-scarce country due to its low average annual precipitation (Molobela and Sinha 2011). As discussed earlier, the low level of precipitation has increased over time. The utilisation of IKS in the water-security processes is based on the fact that indigenous people have successfully managed the ecological and hydrological environments without damaging them (Mahlangu and Gurutsa 2014). They have the ability to adapt to the declining levels of precipitation. The communities of the Kalahari Desert have thrived well under extreme desert conditions.

Besides the provision of water security, other related needs are critical to be understood by realising their extensive implications on food, energy and climate change. Therefore, it may be understood by summarising and incorporating all these needs (Mahlangu and Gurutsa 2014). Denison and Wotshela (2009) mention that indigenous methods of water-resource management and irrigation methods vary from canal, pond and well-digging to the cultivation of low adaptive crops. It further embodies soil-moisture relationships, indigenous irrigation, and the capability of domesticated plants and water-resource management methods. A study in Nepal revealed the importance of indigenous practices of harvesting water from streams in dry areas Osti (2005).

According to Mahlangu and Gurutsa (2014), examples of indigenous practices which are relevant to the water sector include: location; collection and storage of water; water resource management and irrigation methods; conservation strategies; natural forestry management; medicinal plants and medicinal practices. The location of water resources is considered sacred by indigenous communities. It is a place where community members do not cut trees or cultivate. The communities do not pollute these areas. The collection of water by using clay pot containers with a narrow mouth protects the water from contamination over long distances. Most indigenous crops that are planted along the water channels and swamps are those that conserve water and limit soil erosion, like yams, which are considered ideal. They also plant indigenous crops that require minimum irrigation or none at all. Other additional practices are hunting, fishing and gathering. The hunting of game or wild animals and catching of fish is seasonal, allowing the animals time to reproduce. Among the agricultural practices included are crop domestication, breeding and management, agro-ecology, crop rotation, and pest and soil management. All these intervention mechanisms are typical of indigenous communities.

### **Goal 8E: Develop a Global Partnership for Development**

Goal 8E focuses on the cooperation of member countries with pharmaceutical companies to provide access to affordable essential drugs in developing countries. This global partnership goal is a realisation that, while the mindset of a global narrative is imperative, acting locally remains the ultimate test of its effectiveness. The provision of

affordable essential healthcare in developing countries goes to the heart of a real need. As this paper has discussed earlier, the failure to provide essential drugs is one of the major challenges; without donor funding, governments in developing countries face the risk of not affording to fund this need. The bulk of development funding for regional organisations like SADC still comes from donors. Most of the government budget is already being spent on healthcare. Even when the drugs are dispensed, in some cases there is a lack of clear follow-up on how patients are using the drugs. The state of healthcare facilities and required personnel is equally important. The pharmaceutical companies are in most cases not based in developing countries; hence cooperation and partnership are often hard to establish. Global institutions like the World Bank have made several attempts and found it worthwhile to incorporate indigenous knowledge into its approaches regarding development matters affecting the third world (see, for example, World Bank 1998).

### How to Improve Access to Healthcare through IKS

It is in the interest of poor countries to be part of the solutions to the problems of access to healthcare at a local level. At the same time, governments' and the international community's contribution to healthcare, needs to be aware of the local circumstances to enable them to optimally and effectively direct their resources. The important grounded nature of IKS will be lost in trying to universalise systems that are locally and geographically specific (Mahlangu and Gurutsa 2014). Thus, a balanced view will always be the best consideration. Access to healthcare through medicines needs to be understood in terms of vaccination for prevention as well as treatment of disease. Vaccination needs to be explained to the indigenous communities for their commitment before it is rolled out. In some indigenous communities, the involvement of local authority like the chiefs and village heads has proven to be a successful tactic to get community support. If used properly, essential medicines and vaccines have the potential to save up to 10.5 million lives each year and reduce unnecessary suffering (DFID 2006). IKS becomes a catalyst for access to general healthcare—especially medicines. The preventative nature of IKS knowledge application is even more important, as it is natural and less costly.

The argument of this paper is thus to find a way for modern healthcare systems to accommodate IKS or vice versa. There is no absolute position that can discredit the other; a common ground that can benefit the people is the best approach. Otherwise, indigenous knowledge runs the risk of following a path similar to that of modern scientific knowledge in the sense that its acceptance has less to do with its indigenous scientific power, and more to do with how it can serve the needs of capitalism (Briggs 2013). The results need not be perceived as modern healthcare systems replacing IKS methods of healthcare. In Jamaica, farmers have managed to identify ways to adopt a particularly dynamic way of evaluating and using both indigenous and external knowledge and innovations to improve yields and plant variety (Barker and Beckford (2006).

## Recommendations

The promotion of indigenous knowledge at the local level should be used as a way of addressing (rural) poverty and underdevelopment challenges in general for many parts of the global South (Briggs 2013, 2). This paper recommends that IKS be integrated with formal science to produce hybrid knowledge that can be useful in the provision of healthcare. Barrera-Bassols, Zinck, and Van Ranst (2006) carried out a study on the interface between natural and social sciences and found the results to be compelling. Several other scholars have embarked on studies related to the integration of IKS and formal science (Homann, Rischkowsky, and Steinbach 2008; Lado 2004; Liwenga 2008; Marin 2010; Thomas and Twyman 2004; Walker et al. 1999; Blanckaert et al. 2007; Weatherhead, Gearheard, and Barry 2010). The positive outcomes of these studies are supported by this paper. There is a conviction among some scholars that convergence of IKS and formal science can produce the desired results (Lado 2004). How to do it remains one of the major challenges (Homann et al. 2008; Liwenga 2008; Mercer et al. 2004). Some suggestions on the “how” have been made in this paper, but more work needs to be done in future research papers on the subject.

This paper also recommends that local communities be given a chance to determine their own destinies, especially to handle their own issues with their own adaptive methods (Sillitoe and Marzano 2008). Some researchers uphold a biased view of questioning the validity of IKS and how it works. Not taking knowledge out of its cultural context is one of the biggest challenges of indigenous knowledge research (Berkes 2009, 154). Thus, there is a sense of frustration and disappointment that the promise of indigenous knowledge has not been realised (Briggs 2013). IKS has not succeeded in making the leap from a set of conceptual and empirical propositions to a position where it is deployed as a matter of course in development interventions, nor has it succeeded in becoming mainstream in development practice, despite all the optimism (Briggs 2013). The commodification of IKS, especially regarding medicinal plants, needs to come to an end for the realisation of IKS and its importance to retain its meaning.

## Conclusion

The importance of proper healthcare for the poor communities of sub-Saharan Africa cannot be underestimated. The MDGs discussed in this paper further give credence to the desire for all concerned to find solutions to the challenges related to healthcare for the global South. Governments of sub-Saharan African countries must provide funds for the preservation of IKS. The lack of funds, technological problems and a lack of specific frameworks from governments, aimed at harnessing this knowledge, also lead to this decline in indigenous knowledge (Sithole 2007). This paper concludes with a call for indigenous and Western knowledge to be combined to mitigate against the intrinsic effects of environmental processes and, therefore, reduce the vulnerability of rural indigenous communities (Mercer et al. 2007, 1). Indigenous knowledge, therefore, can be useful, as long as it fulfils this function, and following this argument, the

legitimisation of indigenous knowledge by formal science therefore becomes immaterial (Briggs 2013). Thus, it must not be used in comparison; rather it is better used independently or complementary. As demonstrated by the robust debate in this paper, the use of IKS in the provision of healthcare is a challenging agenda, but one which, if successfully addressed, may result in us not looking at a false dawn after all. Indigenous knowledge has the potential to make a meaningful contribution to the provision of basic and sustainable healthcare strategies and a better life in general for the people of sub-Saharan Africa.

## References

- Abid, M., J. Schilling, J. Scheffran, and F. Zulfiqar. 2016. "Climate Change Vulnerability, Adaptation and Risk Perceptions at Farm Level in Punjab, Pakistan." *Science of the Total Environment* 547: 447–460. <https://doi.org/10.1016/j.scitotenv.2015.11.125>.
- Alsan M., and C. Goldin. 2019. "Watersheds in Child Mortality: The Role of Effective Water and Sewerage Infrastructure, 1880 to 1920." *J Polit Econ.* 127 (2): 586–638. <https://doi.org/10.1086/700766>.
- Barrera-Bassols, N., Alfred J. Zinck, and E. van Ranst. 2006. "Symbolism, Knowledge and Management of Soil and Land Resources in Indigenous Communities: Ethnopedology at Global, Regional and Local Scales." *CATENA* 65 (2): 118–137. <https://doi.org/10.1016/j.catena.2005.11.001>.
- Barker, D., and C. Beckford. 2006. "Plastic Yam and Plastic Yam Sticks: Perspectives on Indigenous Technical Knowledge among Jamaican Farmers." *Tijdschrift voor Economische en Sociale Geografie* 97: 535–46. <https://doi.org/10.1111/j.1467-9663.2006.00362.x>.
- Berkes, F. 2009. "Indigenous Ways of Knowing and the Study of Environmental Change." *Journal of the Royal Society of New Zealand* 39: 151–56. <https://doi.org/10.1080/03014220909510568>.
- Blanckaert, I., K. Vancraeynest, R. Swennen, F. Espinosa-Garcia, D. Pinero, and R. LiraSaade. 2007. "Non-crop Resources and the Role of Indigenous Knowledge in Semi-arid Production of Mexico." *Agriculture, Ecosystems and Environment* 119: 39–48. <https://doi.org/10.1016/j.agee.2006.06.015>.
- Briggs, J. 2005. "The Use of Indigenous Knowledge in Development: Problems and Challenges." *Progress in Development Studies* 5: 99–114. <https://doi.org/10.1191/1464993405ps105oa>.
- Briggs, J. 2013. "Indigenous Knowledge: A False Dawn for Development Theory and Practice?" *Progress in Development Studies* 13 (3): 231–243. <https://doi.org/10.1177/1464993413486549>.

- Cameron, A., M. Ewen, D. Ross-Degnan, D. Ball, and R. Laing. 2009. "Medicine Prices, Availability, and Affordability in 36 Developing and Middle-Income Countries: A Secondary Analysis." *Lancet* 373 (9659): 240–249. [https://doi.org/10.1016/S0140-6736\(08\)61762-6](https://doi.org/10.1016/S0140-6736(08)61762-6).
- Campana, M. 2011. "Interview: President of the AWRA from "Water Q & A" with Daniel Gilbert of IHP-HELP Centre for Water Law, Science, and Policy, July 4, 2011." [https://watersecurity.wordpress.com/2011/12/17/defining-water-security/#:~:text=Michael%20Campana%2C%20\(among%20his%20titles,the%20destructive%20aspects%20of%20water.](https://watersecurity.wordpress.com/2011/12/17/defining-water-security/#:~:text=Michael%20Campana%2C%20(among%20his%20titles,the%20destructive%20aspects%20of%20water.)
- Chambers R., and G. Conway. 1991. "Sustainable Rural Livelihoods: Practical Concepts for the 21st Century." December 1991, Institute of Development Studies, Discussion Paper 26.
- Davenport, C., and M. Landler. 2019. "Trump Administration Hardens its Attack on Climate Science." Accessed June 20, 2019. <https://www.nytimes.com/2019/05/27/us/politics/trump-climate-science.html>.
- Dei, G. S. 2000. "Rethinking the Role of IKS in the Academy." *International Journal of Inclusive Education* 4 (2): 111–132. <https://doi.org/10.1080/136031100284849>.
- Dekens, J. 2007. *Local Knowledge for Disaster Preparedness: A Literature Review*. Kathmandu: International Centre for Integrated Mountain Development.
- Department for International Development (DFID). 2006. "Fact Sheet: Access to Medicines." London. Accessed June 22, 2019. <http://webarchive.nationalarchives.gov.uk/+http://www.dfid.gov.uk/Pubs/files/atm-factsheet0106.pdf>.
- Domfeh, K. A. 2007. "Indigenous Knowledge Systems and the Need for Policy and Institutional Reforms." *Tribes and Tribals, Indigenous Knowledge Systems and Sustainable Development: Relevance for Africa* 1 (5): 41–52.
- Denison, J., and L. Wotshela. 2009. "Indigenous Water Harvesting Conservation Practices: Historical Context, Cases and Implications." Accessed February 25, 2021. <https://wrc.org.za/wp-content/uploads/mdocs/TT%20392%20web%20new.pdf>.
- Escobar, A. 1995. *Encountering Development: The Making and Unmaking of the Third World*. Princeton University Press.
- Gleick, P. H. 2002. "Dirty Water: Estimated Deaths from Water Related Diseases 2000–2020." Pacific Institute: Oakland, CA. Accessed June 29, 2019. <https://pubs.acs.org/doi/pdf/10.1021/es072435t>.
- Grey, D., and C. W. Sadoff. 2007. "Sink or Swim? Water Security for Growth and Development." *Water Policy* 9: 545–571. Accessed January 20, 2020. <https://doi.org/10.2166/wp.2007.021>.

- Gumbi, E. 2019. "Becoming Drought Resilient: Why African Farmers must Consider Drought Tolerant Crops." *Inter Press Service*. Accessed June 29, 2019.  
[https://ipsnews.net/2019/03/becoming-drought-resilient-why-african-farmers-must-consider-drought-tolerant-crops/?utm\\_source=rss&utm\\_medium=rss&utm\\_campaign=becoming-drought-resilient-why-african-farmers-must-consider-drought-tolerant-crops](https://ipsnews.net/2019/03/becoming-drought-resilient-why-african-farmers-must-consider-drought-tolerant-crops/?utm_source=rss&utm_medium=rss&utm_campaign=becoming-drought-resilient-why-african-farmers-must-consider-drought-tolerant-crops).
- Gwimbi, P. 2009. "Cotton Farmers' Vulnerability to Climate Change in Gokwe District (Zimbabwe): Impact and Influencing Factors." *Jamba: Journal of Disaster Risk Studies* 2 (1): 81–92. <https://doi.org/10.4102/jamba.v2i2.17>.
- Gyampoh, B. A., S. Amisah, M. Idinoba, and J. Nkem. 2014. "Using Traditional Knowledge to Cope with Climate Change in rural Ghana." *Proceedings, Third International Conference on Climate and Water*, 205–213. Finnish Environment Institute (SYKE), Helsinki, Finland.
- Homann, S., B. Rischkowsky, and J. Steinbach. 2008. "The Effect of Development Interventions on the Use of Indigenous Range Management Strategies in the Borana Lowlands of Ethiopia." *Land Degradation and Development* 19: 368–87.  
<https://doi.org/10.1002/ldr.845>.
- Iloka, N. G. 2016. "Indigenous Knowledge for Disaster Risk Reduction: An African Perspective." Accessed June 26, 2019.  
<https://jamba.org.za/index.php/jamba/article/view/272/532>;  
<https://doi.org/10.4102/jamba.v8i1.272>.
- Jianchu, X., A. Shrestha, V. R. Rameshananda, M. Eriksson, and K. Hewitt. 2007. *Regional Challenges and Local Impacts of Climate Change on Mountain Ecosystems and Livelihoods*. Technical Paper, Nepal International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal.
- Kelman, I. 2005. "Some Outlying Effects of Cyclone Zoe." In *Know Risk*. Tudor Rose Publications, Leicester, and UN Secretariat for the International Strategy for Disaster Reduction, Geneva, 237.
- Lado, C. 2004. "Sustainable Environmental Resource Utilisation: A Case Study of Farmers' Ethnobotanical Knowledge and Rural Change in Bungoma District, Kenya." *Applied Geography* 24: 281–302. <https://doi.org/10.1016/j.apgeog.2004.03.002>.
- Leisinger K. M., L. F. Garabedian, and A. K. Wagner. 2012. "Improving Access to Medicines in Low and Middle Income Countries: Corporate Responsibilities in Context." *Southern Med Review* 5 (2): 3–8.
- Liwenga, E. 2008. "Adaptive Livelihood Strategies for Coping with Water Scarcity in the Drylands of Central Tanzania." *Physics and Chemistry of the Earth* 33: 775–79.  
<https://doi.org/10.1016/j.pce.2008.06.031>.

- Madzwamuse, M., 2010. "Climate change vulnerability and adaptation preparedness in South Africa." *Heinrich Böll Stiftung South Africa*, Cape Town.
- Mahlangu P. M., and T. C. Garutsa 2014. "Application of Indigenous Knowledge Systems in Water Conservation and Management: The Case of Khambashe, Eastern Cape South Africa." *Academic Journal of Interdisciplinary Studies* 3 (4): 151–161. MCSER Publishing, Rome-Italy. <https://doi.org/10.5901/ajis2014.v3n4p151>.
- Marin, A. 2010. "Riders under Storms: Contributions of Nomadic Herders' Observations to Analysing Climate Change in Mongolia." *Global Environmental Change* 20: 162–76. <https://doi.org/10.1016/j.gloenvcha.2009.10.004>.
- Mercer, J., D. Dominey-Howes, I. Kelman, and K. Lloyd 2007. "The Potential for Combining Indigenous and Western Knowledge in Reducing Vulnerability to Environmental Hazards in small Island Developing States." *Environmental Hazards* 7 (4): 245–56. <https://doi.org/10.1016/j.envhaz.2006.11.001>.
- Moahi, H. 2012. "Promoting African Indigenous Knowledge in the Knowledge Economy." *Aslib Proceedings* 64 (5): 540–554. <https://doi.org/10.1108/00012531211263157>.
- Molobela, I. P., and P. Sinha. 2011. "Management of Water Resources in South Africa." *African Journal of Environmental Science and Technology* 5 (12). <https://doi.org/10.5897/AJEST11.136>.
- Montgomery M. A., and M. Elimelech. 2007. "Water and Sanitation in Developing Countries: Including Health in the Equation." *Environ Sci Technol* 41 (1): 17–24. Accessed November 12, 2020. <https://doi.org/10.1021/es072435t>.
- Muzvidzwa, C. T. 2018. "Indigenous Knowledge Systems Employed in Child Health Care in Manicaland: Case of Mutare." Accessed July 1, 2019. <https://ir.msu.ac.zw:8080/xmlui/handle/11408/3084>.
- Noyoo, N. 2007. *Indigenous Knowledge Systems and Their Relevance for Sustainable Development: A Case of Southern Africa*.
- Ocheni, S., and B. C. Nwankwo. 2012. "Analysis of Colonialism and Impacts in Africa." *Cross-Cultural Communication* 8 (3): 46–54.
- Osti, R. 2005. "Indigenous Practices for Harvesting Water from Streams in the Semi-arid Environment of Nepal." *International Journal of Sustainable Development and World Ecology* 12 (1): 13–20. <https://doi.org/10.1080/13504500509469614>.
- Pomposi, C., C. Funk, S. Shukla, L. Harrison, and T. Magadzire. 2018. *Distinguishing Southern Africa Precipitation Response by Strength of El Niño Events and Implications for Decision-making*. <https://doi.org/10.1088/1748-9326/aacc4c>.

- Ravna, S. V. 2019. "Catching a Child: Giving Birth under Nomadic Conditions. The Methods of Pre- and Postnatal Care of Nenets Mothers and Babies." Accessed June 3, 2019. <https://doi.org/10.1080/22423982.2019.1586275>.
- Reed, M. S., A. J. Dougill, and M. J. Taylor. 2007. "Integrating Local and Scientific Knowledge for Adaptation to Land Degradation: Kalahari Rangeland Management Options." *Land Degradation and Development* 18: 249–68. <https://doi.org/10.1002/ldr.777>.
- Rerkasem, K., N. Yimyam, and B. Rerkasem. 2009. "Land Use Transformation in the Mountainous Mainland Southeast Asia Region and the Role of Indigenous Knowledge and Skills in Forest Management." *Forest Ecology and Management* 257: 2035–43. <https://doi.org/10.1016/j.foreco.2008.11.008>.
- Sillitoe, P., and M. Marzano. 2008. "Future of Indigenous Knowledge Research in Development." *Futures* 41: 13–23. <https://doi.org/10.1016/j.futures.2008.07.004>.
- Sithole, J. 2007. "The Challenges Faced by African Libraries and Information Centres in Documenting and Preserving Indigenous Knowledge." *IFLA Journal* 33 (2): 117–123. <https://doi.org/10.1177/0340035207080304>,
- Stigter, C. J., D. W. Zheng, L. O. Z. Onyewotu, and X. R. Mei. 2005. "Using Traditional Methods and Indigenous Technologies for Coping with Climate Variability." *Climatic Change* 70 (1–2): 255–71. <https://doi.org/10.1007/s10584-005-5949-5>.
- Swift, J. 1996. "Desertification: Narratives, Winners and Losers." In *The Lie of the Land: Challenging Received Wisdom on the African Environment*, 73–90, edited by M. Leach and R. Mearns. London: The International African Institute.
- Tambo, J. A. 2016. "Adaptation and Resilience to Climate Change and Variability in North-east Ghana." *International Journal of Disaster Risk Reduction* 17: 85–94. <https://doi.org/10.1016/j.ijdrr.2016.04.005>.
- Thomas, D., and C. Twyman. 2004. "Good or Bad Rangeland? Hybrid Knowledge, Science and Local Understandings of Vegetation Dynamics in the Kalahari." *Land Degradation and Development* 15: 215–31. <https://doi.org/10.1002/ldr.610>.
- Vettori, I., and C. Stuart. 2004. "Cyclone in the Pacific." *Oxfam News* (Oxfam Australia). March: 10–11.
- Walker, D., P. Thorne, F. Sinclair, B. Thapa, C. Wood, and D. Subba. 1999. "A Systems Approach to Comparing Indigenous and Scientific Knowledge: Consistency and Power of Indigenous and Laboratory Assessment of the Nutritive Value of Tree Fodder." *Agricultural Systems* 62: 87–103. [https://doi.org/10.1016/S0308-521X\(99\)00058-X](https://doi.org/10.1016/S0308-521X(99)00058-X).
- Weatherhead, E., S. Gearheard, and R. Barry. 2010. "Changes in Weather Persistence: Insight from Inuit Knowledge." *Global Environmental Change* 20: 523–528. <https://doi.org/10.1016/j.gloenvcha.2010.02.002>.

World Bank. 1998. "Indigenous Knowledge Systems in sub-Saharan Africa: An Overview." IK Notes. Accessed May 17, 2011. <https://www.worldbank.org/afr/ik>, last.

World Health Organisation. 2013. "MDG 4: Reduce Child Mortality" Accessed March 13, 2020. [https://www.who.int/topics/millennium\\_development\\_goals/child\\_mortality/en/](https://www.who.int/topics/millennium_development_goals/child_mortality/en/).