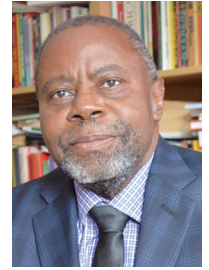


Building on the Indigenous in Combatting Emerging Global Challenges



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Introduction

Since the breakup of the Soviet Union and the widening gap of wealth around the world, there has been heightened tension in many regions, which has spread further with the 9.11 terror attacks in the United States in 2001, the “War on Terror” in Afghanistan and Iraq, and more recently the rise of China and its power struggle with Western countries. Climate change and the Covid-19 pandemic are just two examples of global challenges that have made the current already unstable politico-economic situations more complicated. These challenges show the need for mankind to make full use of all types of knowledge and wisdom to come up with solutions. One of the “glocal” (thinking globally and acting locally) solutions, which will be the focus of this article, is the role of Indigenous Knowledge Systems (IKS). IKS are bodies of knowledge, technologies, innovations, beliefs and value systems which are culturally and ecologically specific, produced by local communities for sustainable community livelihood. They encompass areas of health, education, food and nutritional security, natural resource management, environmental management and climate change adaptation, peacebuilding, conflict transformation, leadership and governance.

The important thing to recognise is that these cultural diversities exist everywhere, including within the United Kingdom, continental Europe, Japan, Korea and China. Each has its own diversity of indigenous knowledge, including languages and value systems, which communities use in all aspects of life to mitigate different life challenges. The focused theme in this article is particularly on IKS in Africa (AIKS) which needs to be recorded in written form before it becomes too late, so that AIKS could contribute to the solutions of global challenges in co-operation with the rest of the world. One of the crucial factors for sustainable development, which tends to be marginalised by Western developmental paradigms and strategies in Africa, is the institutional framework of culture. Relatively speaking, while other world regions including East Asia had the opportunity to conceptualize and integrate their cultural, linguistic and philosophical value systems with Western development policies, the Western models of African development have tended to view African cultural values as limitations to socio-economic development. Sustainable development in Africa, however, cannot be advanced effectively without taking into consideration the socio-economic and cultural realities of African societies as they are and not what other non-African cultures want them to be.

Africa is a continent covering 30 million square kilometres with

diverse IKS based on over 2,000 distinct languages and cultures, 54 countries and a population of over 1.2 billion. This indicates that the African continent is exceptionally rich in ecosystem-specific knowledge systems. Current Western ways of looking at knowledge tend to be limited to explicit knowledge that can be written. However, similar to other indigenous knowledge bases from around the world, AIKS are often tacit and exist in different ways such as oral knowledge, and artistic or spiritual forms, and are more holistic.

While the harnessing of big data and the use of Artificial Intelligence (AI) may seem to hold solutions to many global issues where electricity and digital infrastructure are readily available, it is important to realize that much of the knowledge and wisdom passed over generations is actually not recorded, and recorded knowledge is biased towards certain types of knowledge and languages. It is becoming increasingly known that the latest technologies such as AI cannot fulfill their potential when the data they are based on is biased in the first place. Furthermore, AIKS, again similar to other indigenous knowledge from around the world, tend to be held among the older generations and as these are not recorded, if no effort is made, when those generations are gone, this knowledge would be gone with them forever.

In the search for sustainable solutions to global challenges such as climate change and global pandemics such as Covid-19, AIKS could be interfaced with other knowledge systems for sustainability and enrichment of the global knowledge pool. The following examples illustrate the use of IKS in the diversity of African ecosystems.

Use of AIKS-Based Climate Change Early Warning Systems & Indicators

Studies in various parts of the continent indicate that many of Africa’s intellectual resources built on centuries of engagement with nature remain undocumented. The diversities of vocabularies and values contained in associated indigenous languages have essential information about ecosystems, including soil-water systems, plant and animal phenologies. This knowledge is often represented in myths, rituals and storytelling, allowing survival across generations in locally specific weather and climate variances.

For instance, a study on Tsonga IKS and climate change early warning indicators and systems in Nkomazi Municipality, Mpumalanga Province, South Africa showed that the smallholder farmers used their local knowledge on plant phenology as climate

change indicators. Thus, when specific fruit trees such as guava trees, miracle fruit trees (locally known as *mathunduluka*), marula trees (locally known as *muganu*), as well as leafy vegetables such as amaranths (locally known as *imbuya* and *inkakha*) produce high yields, a good forthcoming planting season with good rains is indicated. However, they experienced that an abundance of fruits from trees (locally known as *makwakwa Strychnos spinosa*) and *emantulwa (Vangueria infausta)* signaled drought and food scarcity in the coming season.

In terms of the behavior of organisms such as birds, locusts, ants, frogs and worms they highlighted the appearance of a local sparrow (known in the IsiTsonga language as *inkontjane*) as indicative of rain coming in a day, while the croaking of frogs was an indicator of immediate rain. These findings were similar to those observed by other studies in Tanzania. Furthermore, the farmers also indicated that the appearance of birds locally known as *tindzayana* indicated the coming of the dry season. In Burkino Faso, herders watch the “nesting of a koobaagi”, the Fulani name for a small quail-like bird, in the early rainy season. The herders believe that when “nests hang high on trees then rains will be heavy; when nests hang low rains will be scarce”. Comparative observations were experienced in Nissa, Malawi, where farmers indicated that the emergence of grasshoppers (*dziwala*) and birds known as *chikhaka* in Chichewa or Nyanja, was indicative of drought.

AIKS in Traditional Medicines for Community Primary Healthcare

The high number of use reports of African Traditional Medicine (ATM) in primary healthcare references demonstrates the significance of ATM knowledge and practices among the diversity of African communities. For example, studies done among the Maasai people in Tanzania and Kenya, predominantly pastoralists and nomads, revealed that they had over 300 medicinal plant species with more than 2,000 use reports. The indicated use reports were classified into health disorder categories based on the International Classification of Primary Care (ICPC) system. The common use of species could be attributed to their high species diversity. Species with high diversity are more available and visible to people, hence are likely to be preferred for use, resulting in high numbers of use reports. Moreover, comparative studies on the use of traditional medicines among the Maasai reveal that the most common category of health conditions treated with medicinal plants was gastrointestinal disorders. These are followed by respiratory, muscular-system disorders and malaria.

African Indigenous Crops Contribution to Global Food Cultural Diversity

Increasing research studies, within and outside Africa, reveal the general lack of knowledge and awareness on Africa’s indigenous crops contribution to global food cultural diversity, especially their socio-cultural influences on cuisines, beverages, household products, and the IKS associated with their cultivation and landrace selections. Most of these African indigenous crops are nutritious, of high value and environmental and climate stress tolerant. Lack of knowledge and awareness of the contributions of Africa’s indigenous crops has negative practical consequences including inadequate investments in preserving and maximizing the use of crop diversity to increase global food and nutritional security, especially in the fight against the adverse effects of pandemics such as Covid-19. This is despite the fact that these systems embed thousands of years of accumulated agronomic expertise in local communities. As a result of this limited knowledge and awareness across the globe on the significance of crops of African origin, in the different parts of the world, agricultural scientists and other stakeholders including policy makers have not taken advantage of this contribution. This is crucial since the world is now facing increasing challenges of climate change, affecting food and nutritional insecurity.

The Case of Covid-19

When Covid-19 started spreading globally, some experts wondered why the pandemic was seemingly slow to affect Africa given its limited health infrastructure, poverty and problems of digital divide. Some African countries already had experiences in managing dreadful disease outbreaks such as Ebola. This had strengthened their response to other pandemics including Covid-19. Through building on the AIKS, African societies have managed to reduce the impact of Covid-19 compared to other global regions, demonstrating the potentiality of AIKS in sustainable development processes.

Covid-19 has shown that regardless of the differences in political regimes of the countries, all people across cultures, social classes and regions are vulnerable to pandemics. The pandemic exposed the following aspects in the context of AIKS:

- (i) Western knowledge systems and technologies alone do not have all the solutions to global challenges including pandemics such as Covid-19;
- (ii) Pandemics are not just biological but have socio-economic, environmental, cultural and political dimensions;
- (iii) Covid-19 has shown the necessity of complementarity and interface of knowledge and technology systems including

- AIKS to mitigate global challenges;
- (iv) Covid-19 has shown the efficacy of AIKS and that Africa's past lessons from different pandemics have made Africans resilient;
 - (v) The holistic, multi- and trans-disciplinary and community-based approach of AIKS to healthcare including ATMs and healing saved millions of Africans from the Covid-19 pandemic;
 - (vi) In most African societies, indigenous forms of knowledge on traditional medicines and healing systems are used. These are not only about treating the biological aspects of health, but also involve the holistic dimensions of health embedded and articulated in indigenous languages and philosophies. For instance, in South Africa, there is an African indigenous philosophy called "Ubuntu", which promotes solidarity, compassion, human dignity, consensus and respect, to mitigate common challenges;
 - (vii) Limitations of current Western knowledge and technologies in Covid-19 have emphasised the necessity of more research on the holistic nature of ATM including the comparative role of African indigenous languages and associated home-grown philosophies in healthcare.

In the past, there was a neglect of understanding African indigenous survival strategies and resilience from past healthcare challenges embedded in indigenous languages and associated home-grown philosophies. Western education in Africa tends to depend on external resources, often creating a digital divide among social groups and communities. It is therefore important to recognise the relevance of AIKS in education and sustainable livelihood.

The pandemic also emphasised the need for African countries to learn from its global partners that have leveraged their indigenous home-grown philosophies, languages, knowledge and innovation systems for economic growth and sustainable development.

Building on the Indigenous: Lessons from East Asia

In today's economic growth and development discourse, the development trajectory of many East Asian countries is reflected as successes due to:

- (i) Ability to complement their IKS, home-grown philosophies and languages with other knowledge, innovation and technological systems from the global pool of knowledge to develop their own distinctive philosophical and technological development perspectives;
- (ii) East Asian states' capacity to create the necessary conditions

- for socio-economic development, including investment, sustainable use and protection of natural resources, human capital development, mobilisation, promotion and protection of indigenous knowledge systems, grassroots innovations and home-grown philosophies;
- (iii) The inclusive nature of their economic growth and generating exceptional inclusion for all in wealth and job creation;
- (iv) Promotion of domestic savings and investment. There were concerted efforts at household, corporate and government levels to:
 - invest in culturally relevant education for social capability and mobility;
 - create internalised labor markets that bound firms to workers and workers to firms, thereby giving workers a strong incentive to flexibly adapt to new technology, improved social capability;
 - improve industrial policy that reduced the cost to private firms of securing foreign technology, enhancing social capacity.

Building on AIKS & Resources for Sustainable Development

In the context of this discussion, building on the indigenous is not necessarily what is traditional but whatever the African people themselves, in their specific cultural and ecological communities, consider to be an authentic expression of their cultural values. Building on the indigenous as a philosophy of life creates self-reliance and instills confidence among the African people. One of the impacts of slavery, colonisation and apartheid, was the destruction of a sense of confidence among African people in the development process. The marginalisation of African culture and history went hand in hand with that of its AIKS, indigenous languages and home-grown philosophies.

The Covid-19 pandemic emphasizes Africa's need for reviving its own scientific and technological development. This involves the following:

(i) *Leveraging Africa's strategic geographical location*

The African continent is bounded on the west by the Atlantic Ocean, on the north by the Mediterranean Sea, on the east by the Red Sea and the Indian Ocean, and on the south by the Atlantic and Indian oceans. This strategic position provides opportunities for Africa to build on its indigenous "Blue Economy" potentials as an emerging global economic concept. The potentialities of Africa's blue economy involves developing its IKS-based ocean industries and

sectors aligned with African indigenous marine environmental ethics for socio-economic growth and improve livelihood opportunities. It includes some of Africa's key income-earning sectors, such as small-scale and commercial fisheries, as well as aquaculture, coastal tourism, transport and ports, mining and energy. This has a great potential for Africa to expand its inter-regional trade; for instance, in the Indian Ocean region, inter-regional trade in 2017 accounted for 27.2%.

(ii) Human and natural resources

The history of the continent provides sufficient evidence that Africa has the potential to restore and revive its historical legacy as the cradle of humankind and dignity. African countries can enter into complementary knowledge and technological partnerships with developed countries to use its rich diverse and holistic IKS-based capability systems (including cultural, linguistic, spiritual, scientific, technological and moral knowledge) for sustainable development of its minerals, flora and fauna into unique IKS products and services.

With over 60% of the world's arable land, Africa can feed itself and become the bread basket of the world. Moreover, Africa has approximately 30% of the earth's mineral resources (cobalt, nickel and uranium, titanium, graphite, iron ore, phosphates, aluminum, gas, and copper, as well as diamonds and gold) as the inputs for production of goods in the 4th Industrial Revolution, which makes it the world's fastest-growing region for foreign direct investment. Africa is the youngest continent in the world, with 60% of its population aged below 25 who can be developed as a critical mass of IKS-based human capital conversant on the complementarity of knowledge systems for sustainable development and its contribution to the global economy. However, this requires peace, security, stability and good governance within the framework of learning from the past to build a better future.

(iii) Africa's changing political landscape

Over the past two decades the socio-economic and political landscape on the African continent has changed dramatically. There is ample evidence to suggest that democracy is gradually taking root in the continent as there are an increasing number of African leaders who have left office democratically. This is totally different from the earlier period of life presidencies and absolute monarchies. There is no doubt that former African heads of state and government who left office democratically have accumulated a lot of lived experience in democracy, leadership and governance. Their knowledge and experiences need to be harnessed and shared across generations and successive political leadership on the continent, especially with the African youth. This is in line with the African indigenous

worldview and leadership ethos of learning from the past to build a better future.

This growing realisation among African leaders for building on the indigenous and the complementarity of knowledge systems in the global knowledge economy for building "the Africa We Want" has been articulated in continental development agendas such as the African Union Agenda 2063, the Lagos Plan of Action, the Final Act of Lagos and the recently adopted African Continental Free Trade Area (AfCFTA). The latter provides a framework for trade liberalisation of goods and services to be implemented in all 54 African countries with an estimated combined GDP of US\$2.5 trillion for a population of over 1.2 billion, making AfCFTA the largest free trade area in the world.

(iv) Africa's historical legacy and heritage as sustainable developmental assets in the global economy

Contrary to past Western thought that before colonisation African people had no social institutions and no history of science, innovation and technology ideas, historical and archeological testimonies such as the remains of the ancient city of Gede in Kenya, Great Zimbabwe, the Great Pyramids, Timbuktu and other historical landmarks show Africa has the world's oldest record of scientific technological achievements including great civilisations. These historical achievements could have only been guided by highly sophisticated African indigenous socio-economic, political, spiritual and cultural institutions developed by African people's themselves. However, post-colonial African countries have not yet managed to leverage these IKS, including historical scientific and technological achievements and resources for sustainable development (*Photo & Chart. Please note that the Chart is included to show cultural diversity and not as comments on political independence movements*).

Conclusion

AIKS puts emphasis on conceptualizing cultural diversity as an asset for complementarity and democracy of knowledge systems to mitigate global challenges. Cultural diversities and indigenous knowledge are not unique characteristics of African countries and exist in every country and region.

Building on the indigenous and advancing complementarity of knowledge systems within and outside Africa, as an asset, paves the way for:

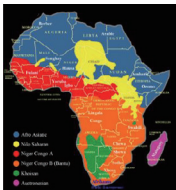
- (i) creating high-level multilateral platforms and strategic partnerships that advance international human understanding, mutual cooperation, social and epistemic

- justice;
- (ii) development of strategic programs and partnerships to produce unique products and services for competitive advantage in the global market economy through the interface of IKS and resources, with other knowledge and technological systems;
- (iii) building a new generation of global human capital conversant in the significance of IKS for international peacebuilding, and

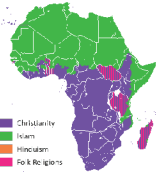
- a sustainable and dynamic global market economy;
 - (iv) developing global educational programs to promote knowledge and awareness of rich cultural diversity and historical contribution to the global pool of knowledge.
- When diversity is seen as an asset, local IKS could be harnessed for the benefit of humankind and to mitigate global challenges. **JS**

Photo: Author

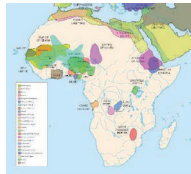
Historical Landmarks of Africa's Scientific & Technological Ideas



Africa's Cultural & Linguistics Map



African Religious Diversity Map



African Civilizations Pre-colonial Map



Remains of ancient African city Gede, Kenya



Great Zimbabwe



Aksumite Empire Ruins, Ethiopia



Luxor Temple, Egypt



Kilwa-kisiwani Mosque Tanzania



Rock Hewn Churches of Lalibela, Ethiopia



South-Africa's Adams-Calendar



Great Pyramid of Giza, Egypt



Nok Caves, Togo



Songhai Empire-Mosque, Djenne

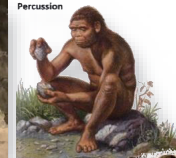
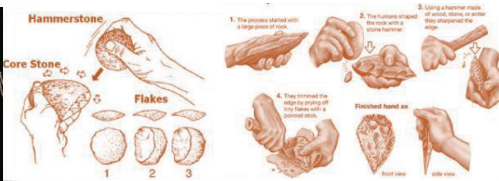


Timbuktu, Mali



Ancient Tanneries in Fez Morocco.

Landmarks of Africa as cradle of humankind



CHART

Indigenous knowledge elsewhere

Linguistic & cultural diversity in UK



Scottish Gaelic name: *Pàrtaidh Nàiseanta na h-Alba*
Scottish name: *Scots Naitional Pairtie*
English name: Scottish National Party (SNP)

Welsh name: *Plaid Cymru*
English name: The Party of Wales

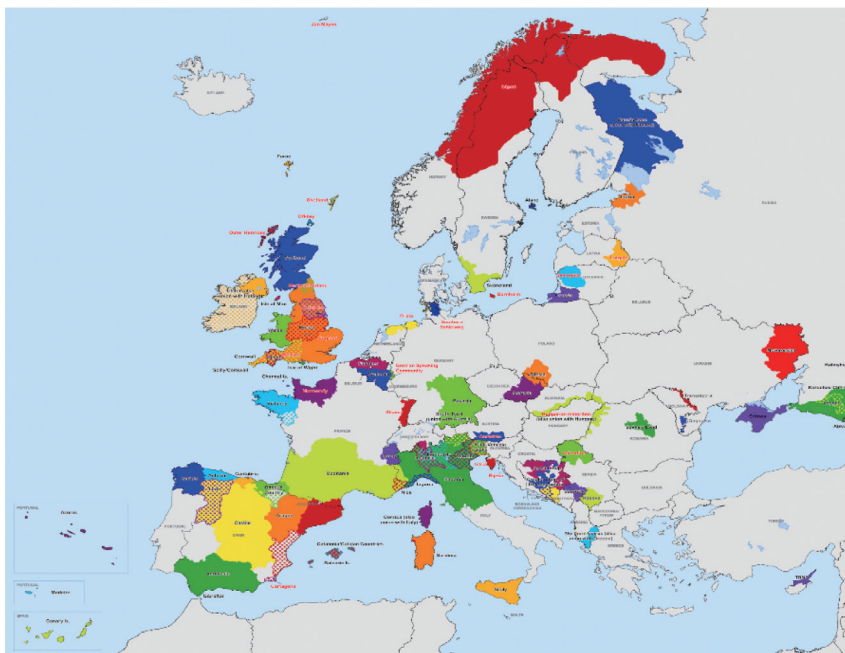
Irish name: *Sinn Féin*
(Meaning: Ourselves)

Cornish name: *Mebyon Kernow*
English name: The Party for Cornwall

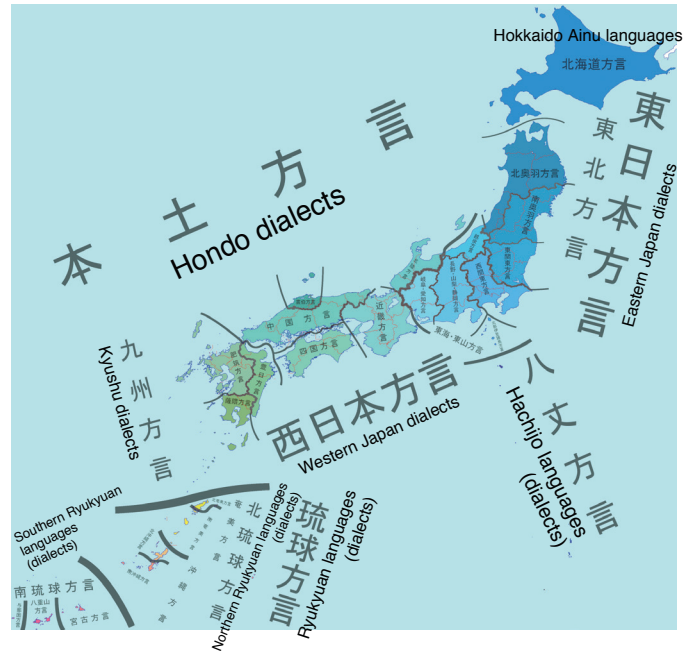
Cornish name: *Party Kenethlegek Kernow*
English name: Cornish Nationalist Party (CNP)

Manx name: *Mec Vannin* (Meaning: Sons of Mann)
Manx name: *Liberal Vannin Party*

Diverse linguistic & cultural minorities in Europe



Linguistic & cultural diversity (languages & dialects) in Japan



Linguistic & cultural diversity on Korean Peninsula



Source: Komatsu Research & Advisory (KRA)

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