

## **Addressing climate change through indigenous knowledge systems**

Edmond Sanganyado

Shantou University China

Hiding from the blistering heat, a brawny calf leaned on a mopane tree with a short papyrus rope tied around its neck. Tears rolled down the calf's eyes as if aware of its impending doom. A swarm of flies delivered a sad eulogy as they buzzed flying around the calf's nose. An uninvited cloud of dust swirled driven by the hot and dry winds. It was almost Christmas time, yet the clouds were empty, the rivers had dried, the grass was all gone, and the cattle were dying. Any hope of survival was fast disappearing like morning dew on a sunny summer morning.

In high school, we were taught that the southern parts of Zimbabwe, particularly in the Beitbridge district, were suitable for animal husbandry and not crop cultivation. Eager to know why I visited a local library and delved into several geography textbooks. Land degradation was turning parts of the Beitbridge district into a desert. To compound the problem, perennial erratic rainfalls made the district prone to droughts. The frequency of droughts has significantly increased in the past two decades, possibly due to climate change. Sadly, after losing its mother at birth, the calf was the latest victim of climate change.

"It is the cycle of life," a villager said trying hard to hide the pain of losing a dozen cattle due to lack of water in the once majestic Mzingwane River and its tributaries. "Our loss is a gain to the forests because when cattle die, they decompose into valuable nutrients essential for plant growth." The explanation was startling considering a cow is a symbol of wealth among the Venda people in Beitbridge. My brother in law once told me a story of a Venda village in Beitbridge where the community rejected plans to build a school. The village elders argued the school would take away

an important grazing land for their cattle. It is quite unfortunate that the government officials from the ministry of education dismissed the perceptions of the villagers and labeled them primitive, pedestrian, and unproductive.

Although despicable, researchers often view themselves as the climate catastrophe saviors imbued with unassailable scientific wisdom. Listening to the villagers talk about the loss of cattle, short and erratic rain seasons, increased atmospheric temperatures, and a decrease in wild fruits, I realized they understood climate change probably better than most climate experts. Without using scientific jargon or citing the latest climate science research, the villagers discussed the causes, effects, and possible adaptation and mitigation strategies using folklore, proverbs, and personal observations. The villagers were not hopeless, ignorant, and primitive victims as portrayed in many academic studies and by media reports. What intrigued me the most was that the villagers openly shared their knowledge, experience, and observation and they allowed others to critique their views publicly. Theories about climate change were proposed, rebuffed or supported openly, the villagers were not looking for consultations but collaborations.

In many African communities, knowledge is not an attribute of an individual, but it is collectively owned by the community. Indigenous knowledge systems have survived for many centuries without being preserved in written form. Personal observations are often celebrated as a key resource for the acquisition of new knowledge. This is best illustrated by Shona proverbs such as *afamba apota* – traveler sees what lies beyond sight, and *takabva neko, kumhunga hakuna ipwa* – we have been there, there are no sweet sorghums in a millet farm. Together with proverbs and folklore, personal observations knitted into stories are often shared openly during social gatherings such as funerals, weddings, community harvests, church meetings, and when people share alcohol. Thus, in many African communities, storytelling is the academic research equivalent to open data.

Listeners are free to interpret the story in a way that applies to their present circumstances. For that reason, openness remains the key ingredient for knowledge preservation and transmission in indigenous knowledge systems.

Climate change is causing unfathomable problems in many rural communities in Africa. I searched on SCOPUS for articles and books on climate change in Africa and obtained an impressive 27,840 documents. Through open science, villagers in the Beitbridge district could benefit from these studies, yet less than 7 % of the documents are available through open access. Hiding research behind paywalls does a great disservice to the communities that funded the research or took part in the research as subjects. The scientific community should learn about the importance of openness from indigenous knowledge systems. For example, through living in proximity to the environment, indigenous people developed a knowledge system governed by taboos, preserved through folklore and proverbs, and transmitted through storytelling.<sup>1,2</sup> Recently, indigenous knowledge was used for complimenting climate science in areas where meteorological data is absent.<sup>3,4</sup> Indigenous people did not hide their personal observations behind a paywall; they freely shared their knowledge with researchers, thus contributing to the advancement of climate science.

## References

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