



Traditional and Indigenous Knowledge for Climate Change Adaptation in Eswatini

Briefing Note

Samkele Tfwala, Sizwe Mabaso, Minky Groenewald,
Khetsiwe Khumalo, Siphon Matsebula, Gugu Sibandze

March 2023



Introduction

The Kingdom of Eswatini has identified the importance of engaging Indigenous and local communities and incorporating Traditional Knowledge into its National Adaptation Plan (NAP) process. The Government of Eswatini led a national outreach program on its NAP process in 2022 that included engagement with communities in an exercise to collect Traditional and Indigenous Knowledge that could inform adaptation policies, planning, and programs.

This briefing note explores the value of Traditional and Indigenous Knowledge in helping communities forecast weather and climate, identify and manage changes in seasons and weather, and develop responses to climatic variability and climate change. It provides an overview of how Traditional and Indigenous Knowledge is used by communities to predict weather and seasonal change in the Hhohho and Shiselweni administrative regions of Eswatini. The briefing note will contribute to understanding how Traditional and Indigenous Knowledge systems help communities identify and cope with climate change and how this understanding can contribute to NAP processes.

Box 1. Eswatini's NAP process

Eswatini started developing its first NAP in 2022, led by the Climate Change Unit, Ministry of Tourism and Environmental Affairs (MTEA). The NAP process sets out a way forward for implementing the adaptation priorities identified in Eswatini's 2021 nationally determined contribution (NDC), which focused on five priority sectors: water, ecosystems and biodiversity, health, infrastructure, and agriculture—with a cross-cutting area of disaster risk reduction. The NDC highlights the importance of finalizing and implementing the NAP and developing a national climate change bill. Eswatini's 2021 Adaptation Communication identified the next steps for advancing national adaptation: strengthening institutional and human resource capacities, establishing legal and policy frameworks, monitoring and reporting on adaptation action, accessing climate finance, using Indigenous Knowledge to inform adaptation action, engaging traditional leaders, engaging the private sector, and establishing early warning systems.

Sources: Government of the Kingdom of Eswatini, 2021a, 2021b.

Traditional and Indigenous Knowledge in Eswatini

Eswatini is a monarchy located in the southeastern part of Africa. With an area of 17,364 km², the country borders South Africa (to the north, west, and south) and Mozambique (to the east) (MTEA, 2016b, p. 25). It is considered a lower-middle income country (with a 2021 GDP per capita of USD 3,978.70) with an estimated population of 1.2 million in 2021 (World Bank, 2023). The country is divided into four administrative regions: Lubombo, Shiselweni, Manzini, and Hhohho. It is further subdivided into 55 local administrative areas (known as *Tinkhundla*) and more than 360 chiefdoms. Eswatini is also classified into six physiographic zones: Highveld, Upper Middleveld, Lower Middleveld, Western Lowveld, Eastern Lowveld, and Lubombo Range (Van Waveren, 1992).

Eswatini's economy is highly dependent on climate-sensitive natural resources, such as subsistence agriculture: an estimated 80% of farms rely on rainfed agriculture (MTEA, 2016a). The people of Eswatini have remarkably close links with their ecosystems and biodiversity; consequently, the country is highly vulnerable to the impacts of climate change and variability.

Traditional and Indigenous Knowledge has been an area of focus in the country in the contexts of adaptation to climate change and improving resilience (Government of the Kingdom of Eswatini, 2021a, 2021b; MTEA, 2016a). The United Nations Educational, Scientific and Cultural Organization (2020) defines Indigenous Knowledge as “knowledge that refers to the understandings, skills and philosophies developed by societies having long histories of interacting with their natural surroundings” (p. 2). The kingdom has no official definition of Traditional and Indigenous Knowledge, which varies across regions and communities depending on communities' interactions with the environment and proximity to external influences. However, Traditional and Indigenous Knowledge is understood to be a source of invaluable information for climate change assessment and adaptation (Makondo & Thomas, 2018). Traditional and Indigenous Knowledge plays a role in predicting the weather, understanding climate risks, coping with climate impacts, informing and improving responses to climate change and variability, and identifying adaptation options (Leal Filho et al., 2022).

Box 2. Traditional and Indigenous Knowledge in the NAP process

The Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC) acknowledges that adaptation action should be based on the best science, as well as Traditional Knowledge, Indigenous Knowledge, and local knowledge systems. The Intergovernmental Panel on Climate Change's (IPCC) Working Group II *Sixth Assessment Report* acknowledges that these knowledge systems provide “useful climate change information, observations and solutions” and enable improved adaptation outcomes. The UNFCCC's Local Communities and Indigenous Peoples Platform working group recognizes the importance of Indigenous Knowledge for climate action, including solutions based on Traditional and Local Knowledge in climate policies and plans, including NAPs.

Sources: IPCC, 2022, ch. 18, p. 2,713; United Nations, 2015, Article 7, para. 5; United Nations Climate Change, 2020.

Through Eswatini's climate change policy, the country aims to enhance the application of Indigenous Knowledge in emerging research, systematic observation, and monitoring (MTEA, 2016a). In addition, the 2021 updated NDC recognizes that Indigenous Knowledge can contribute to climate change adaptation and mitigation actions (Government of the Kingdom of Eswatini, 2021b). The country's initial Adaptation Communication to the UNFCCC notes a limited capacity to integrate Traditional and Indigenous Knowledge into climate change adaptation (Government of the Kingdom of Eswatini, 2021a). It further identifies the need to develop systems that integrate Traditional Knowledge and conventional science in adaptation research and development, as well as the use of this learning to inform climate adaptation planning and programs.

Methodology

This briefing note draws on information collected through community consultations and focus group discussions held in 2022 in the Hhohho and Shiselweni administrative regions.¹ Community members engaged in the consultations included *umsingisi wekutimilela* (senior citizens), representatives from traditional authorities (such as *Bandlancane*, community development committees), *tinyanga* (traditional healers), *lutsango* (women) representatives, and youth representatives. The local-level input was complemented by information collected through a desk review of relevant documents.

¹ The background technical report, *Climate Change Outreach Programme: Raising Public Awareness on Adaptation Action and Strengthening Traditional and Indigenous Knowledge Systems to Enhance Resilience in Eswatini*, provides details of the community consultations. A copy of this report can be obtained by contacting MTEA.

Traditional and Indigenous Knowledge in Weather and Climate Forecasting

Accurate, timely, and relevant weather prediction technologies enable communities to anticipate and prepare for future conditions, including precipitation patterns, and minimize the adverse impacts and effects of storms and inclement weather. However, modern weather prediction tools and systems are unfamiliar to many Eswatini people, especially those in rural areas. Traditional and Indigenous Knowledge is important for these rural communities to predict local weather and climatic change (Siambombe et al., 2018). In addition, these communities have developed Indigenous Knowledge that helps them identify coping strategies to deal with weather hazards such as heavy rainfall and high winds.



Figure 1. Examples of water harvesting at Shewula (left) and harvested water used to water vegetables as part of crop diversification (right).

Table 1 provides an overview of how the Emaswati (people of Eswatini) use Traditional and Indigenous Knowledge to predict the weather, especially rainfall, and the adaptation actions that are implemented at the community level in response to the observations. The behaviour and activities of insects, birds, and animals; wind; and moon alignment are indicators used to inform short- and long-term weather predictions, which in turn, inform adjustments in farming and community activities.

Table 1. Synthesis of Traditional Knowledge and Indigenous Knowledge to forecast weather and associated adaptation measures in the Hhohho and Shiselweni regions

Traditional Knowledge/ Indigenous Knowledge indicator	Explanation/weather and seasonal forecasting	Adaptation measure (where applicable)
Swarm of locusts	Early warning that indicates a dry or drought year is expected	In anticipation of a dry year or month, the plowing season would be delayed from the usual September to December/January. In addition to delaying the cultivation period, some farmers attempt no-tillage farming (a form of conservation agriculture) to retain moisture and conserve water. In drought years, some community members sell their cattle or relocate their herds to areas unaffected by the drought through a process called <i>kusisa</i> . Some community members buy goats, which are considered more resilient to drought.
The moon rises with a crescent facing up	Indicates a dry month	
The absence of numerous black swallows	Absence means there will be no rains	
North winds	Early warning suggesting a delay in the rainy season	
The calling of <i>umfuku</i> or <i>phezukomkhono</i> (birds)	Signals the onset of a wet summer (plowing) season	Some community members take advantage of the wet summer by increasing the hectareage under cultivation, which would ensure adequate land supply in the following plowing season. Some community members diversify the crops (vegetables and legumes) planted.
Frogs making noise (croaking) or their presence in streams	Signifies rain	Farmers begin to prepare land for planting. Some community members, especially those without large rainwater harvesting tanks, take advantage of the anticipated rains and place containers (20-litre buckets and 200-litre drums) under their roofs to harvest water from rooftops (see photographs in Figure 1). The harvested water is used either for domestic purposes or for watering vegetables. Some community members do not harvest much water because their houses are not fitted with rainfall gutters.
The sighting of numerous black swallows		
Edible ants		
Playful behaviour of cows (especially heifers and bullocks)	Indicates that rain is very close	
The moon rises with a crescent facing sideways	Early warning for larger amounts of rainfall	Community members and families may use rituals to stop rains or storms, in addition to preparing more containers for rainwater harvesting. For example, a mixture of water and salt is believed to stop a developing storm.
Westerly winds		

Discussion

This overview of Traditional and Indigenous Knowledge that is used to predict Eswatini weather in the short term and over seasons demonstrates that a body of knowledge based on local contexts has accumulated over many years. This knowledge can be particularly important in rural communities that rely on rainfed agriculture and in communities that lack localized modern weather and climate forecasts. Many farmers have used this knowledge to forecast seasonal rainfall, which in turn influences actions such as the timing of tilling soil and planting crops. In addition, Traditional Knowledge is used to predict weather extremes, which helps communities prepare for and address the adverse impacts of these events.

Eswatini is rich in Traditional and Indigenous Knowledge that can inform the NAP process and identify responses to climate change. At the same time, some attitudes toward climate change and adaptation are influenced by community-level beliefs that the negative impacts of climate change are associated with community members' actions that are considered inappropriate, such as inappropriate dress. These types of beliefs work against efforts to help people to understand the science of climate change and can undermine efforts to promote action on adaptation. This learning reinforces the need for a gender-responsive approach in Eswatini's NAP process that respects and values Indigenous and Traditional Knowledge while also dispelling beliefs that are inaccurate and discriminatory.

Recommendations

This review has provided insights to improve our understanding of the role of Traditional and Indigenous Knowledge in predicting weather and seasonal change. Eswatini's NAP process can draw on this knowledge—and it represents a platform for bringing the knowledge held by local communities into the adaptation planning and policy process.

Recommendations to further the understanding of Traditional and Indigenous Knowledge for adaptation in Eswatini are listed here:

1. The wealth of Traditional and Indigenous Knowledge pertaining to climate change from all the country's regions needs to be documented (preferably by agroecological region) and managed for the benefit of wider audiences within and outside of Eswatini. The MTEA, whose mandate includes climate change in Eswatini, can lead the process.
2. The mainstream curriculum for schools and universities could be updated to include climate change and the relevant aspects of Traditional and Indigenous Knowledge as they relate to climate change. Both climate science and Traditional Knowledge about weather forecasting are poorly understood, and Traditional Knowledge is seldom used by younger generations. It is recommended that such knowledge be included in the climate change curriculum to help retain this knowledge in local communities.
3. Structured processes are required for local communities to engage in the NAP process. The lack of a system or means to collect Traditional and Indigenous Knowledge from communities means that this knowledge does not inform the NAP. Traditional and Indigenous Knowledge should inform the identification of adaptation interventions for local communities. The MTEA, through the Climate Change Unit, can spearhead structured engagement processes for communities in the NAP process.

-
4. Further research is needed to better understand how Traditional and Indigenous Knowledge can inform the science of climate change. For example, climate change can affect the accuracy of weather predictions made using Traditional and Indigenous Knowledge, which may impact the perceptions of its effectiveness. However, continuous observations at the community level can reinforce scientific conclusions. The IPCC (2022) recommends that adaptation interventions blend Indigenous and Traditional Knowledge with scientific knowledge at the NAP planning and implementation stages. An example is a national project aimed at developing a drought-monitoring system for the kingdom that seeks to use Traditional and Indigenous Knowledge to validate the outputs of the system. This research will help to strengthen the links between the monitoring system and Traditional Knowledge and highlight the importance of continued observations in local communities.

Recognizing and valuing Traditional and Indigenous Knowledge in Eswatini's rural areas is important because adaptation can be more effective when it is informed by these knowledge systems. The country's NAP process offers an opportunity to engage with communities, collect data on Traditional and Indigenous Knowledge, better understand cultural beliefs that impact adaptation responses, and identify gender-sensitive and empowering adaptation actions that will be accepted and taken up by communities.

References

- Intergovernmental Panel on Climate Change. (2022). *Climate change 2022: Impacts, adaptation, and vulnerability. Contribution of Working Group ii to the Sixth Assessment Report of the IPCC*. [Eds. H. O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösche, V. Möller, A. Okem, A., & B. Rama]. Cambridge University Press. <https://www.ipcc.ch/report/ar6/wg2/>
- Government of the Kingdom of Eswatini. (2021a). *Initial Adaptation Communication to the United Nations Framework Convention on Climate Change*. Ministry of Tourism and Environmental Affairs. <https://unfccc.int/sites/default/files/resource/eswatini-climate-change-adaptation-plan-unfccc.pdf>
- Government of the Kingdom of Eswatini. (2021b). *Update of the nationally determined contributions*. <https://unfccc.int/documents/497962>
- Leal Filho, W., Barbir, J., Gwenzi, J., Ayal, D., Simpson, N. P., Adeleke, L., Tilahun, B., Chirisa, I., Gbedemah, S. F., Nzengya, D. M., Sharifi, A., Theodory, T., & Yaffa, S. (2022). The role of indigenous knowledge in climate change adaptation in Africa. *Environmental Science & Policy*, 136, 250–260. <https://doi.org/10.1016/j.envsci.2022.06.004>
- Makondo, C. C., & Thomas, D. S. G. (2018). Climate change adaptation: Linking indigenous knowledge with western science for effective adaptation. *Environmental Science & Policy*, 88, 83–91. <https://doi.org/10.1016/j.envsci.2018.06.014>
- Ministry of Tourism and Environmental Affairs (MTEA). (2016a). *National Climate Change Policy, 2016*. The Kingdom of Swaziland. <https://info.undp.org/docs/pdc/Documents/SWZ/Swaziland%20Climate%20Change%20Policy%202016%20Final.pdf>
- Ministry of Tourism and Environmental Affairs (MTEA). (2016b). *Swaziland's Third National Communication to the United Nations Framework Convention on Climate Change*. Kingdom of Swaziland. <https://unfccc.int/sites/default/files/resource/swznc3.pdf>
- Siambombe, A., Mutale, Q., & Muzingili, T. (2018). Indigenous knowledge systems: A synthesis of Batonga peoples' traditional knowledge on weather dynamism. *African Journal of Social Work* 8(2), 46–54. https://www.researchgate.net/publication/332708942_Indigenous_knowledge_systems_A_synthesis_of_batonga_people%27s_traditional_knowledge_on_weather_dynamism
- United Nations. (2015). *Paris Agreement*. https://unfccc.int/files/home/application/pdf/paris_agreement.pdf
- United Nations Climate Change. (2020). *Local Communities and Indigenous Peoples Platform Web Portal: Overview*. <https://lcipp.unfccc.int/lcipp-background/overview>
- United Nations Educational, Scientific and Cultural Organization. (2020). *Report of the UNESCO expert meeting on indigenous knowledge and climate change in Africa*. <https://unesdoc.unesco.org/ark:/48223/pf0000374999.locale=en>
- Van Waveren, E. & Nhlengetfwa, J. V. (1992). *Agro-climatic characterization of Swaziland*. Ministry of Agriculture and Cooperatives. <https://edepot.wur.nl/485963>
- World Bank. (2023). *GDP per capita (current US\$); Population total – Eswatini*. <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=SZ>

© Government of The Kingdom of Eswatini

This briefing note was prepared with support from the NAP Global Network Secretariat, the International Institute for Sustainable Development (IISD), with financial assistance from the United States Government's Department of State.

Authors:

Samkele Tfwala and Sizwe Mabaso (Department of Geography, Environmental Science and Planning, University of Eswatini, P/Bag 4 Kwaluseni, Eswatini);

Minky Groenewald and Khetsiwe Khumalo (Ministry of Tourism and Environment Affairs, P/Bag Mbabane, Eswatini);

Sipho Matsebula (Eswatini Environment Authority, RHUS Office Park, Mbabane, Eswatini);

Gugu Sibandze (Eswatini Institute for Research in Traditional Medicine, Medicinal and Indigenous Food Plants, University of Eswatini, P/Bag 4 Kwaluseni, Eswatini).

Photos: Thembelihle G. Maseko

Suggested Citation: Tfwala, S., Mabaso, S., Groenewald, M., Khumalo, K., Matsebula, S., & Sibandze, G. (2023). *Traditional and Indigenous Knowledge for Climate Change Adaptation in Eswatini*. Government of the Kingdom of Eswatini. Ed: Deborah Murphy. Mbabane: Eswatini.



This project is undertaken with the financial support of:
Ce projet a été réalisé avec l'appui financier de :

Secretariat hosted by:
Secrétariat hébergé par :

