

Harnessing Indigenous Knowledge for Climate Action in Africa

Kariuki Muigua

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Harnessing Indigenous Knowledge for Climate Action in Africa

By: Kariuki Muigua*

Abstract

Africa is a continent that is highly vulnerable to climate change. Most African countries are already experiencing effects of climate change such as drought, water scarcity, flooding among others which affect the attainment of Sustainable Development. Responding to climate change is an urgent concern in Africa. Africa has the potential to adopt innovative approaches in addressing climate change including the use of indigenous knowledge. This paper critically discusses the role of indigenous knowledge in addressing the impacts of climate change in Africa. The paper defines indigenous knowledge. It argues that Africa is endowed with indigenous knowledge which can be effective in responding to climate change. The paper examines the progress made towards utilizing indigenous knowledge for climate action in Africa and challenges thereof. It also offers suggestions towards harnessing indigenous knowledge for climate action in Africa.

1.0 Introduction

Africa is a continent that is highly vulnerable to climate change¹. This has been attributed to several reasons including endemic poverty and high dependence on rain-fed agriculture, complex governance and institutional dimensions, limited access to capital including markets and technology, weak infrastructure, ecosystem degradation and poor management of natural resources, disasters both natural and man-made and conflicts². This vulnerability is worsened by strong dependence of African economies on climate

* *PhD in Law (Nrb), FCI Arb (Chartered Arbitrator), OGW, LL. B (Hons) Nrb, LL.M (Environmental Law) Nrb; Dip. In Law (KSL); FCPS (K); Dip. in Arbitration (UK); MKIM; Mediator; Consultant: Lead expert EIA/EA NEMA; BSI ISO/IEC 27001:2005 ISMS Lead Auditor/Implementer; ESG Consultant; Advocate of the High Court of Kenya; Professor at the University of Nairobi, Faculty of Law; Member of the Permanent Court of Arbitration (PCA) [February, 2024].*

¹ Kimaro. Didas et al., 'Climate Change Mitigation and Adaptation in ECA/SADC/COMESA Region: Opportunities and Challenges.' Available at https://www.researchgate.net/publication/346628199_Climate_Change_Mitigation_and_Adaptation_in_ECASADCCOMESA_region_Opportunities_and_Challenges (Accessed on 15/02/2024)

² Ibid

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sensitive natural resources³. According to the United Nations Environment Programme (UNEP), while Africa has contributed negligibly to the changing climate, with just about two to three percent of global emissions, it stands out disproportionately as the most vulnerable region in the world⁴. This vulnerability is driven by the prevailing low levels of socioeconomic growth in the continent⁵. UNEP further points out that while climate change is global, the poor are disproportionately vulnerable to its effects since they lack the resources to afford goods and services they need to buffer themselves and recover from the worst of the changing climate effects⁶.

Responding to climate change is an urgent concern in Africa. Most African countries are already experiencing effects of climate change such as drought, water scarcity, flooding among others⁷. Climate change is having a devastating impact on the African continent creating food insecurity, stressing water resources, depleting human health, displacing populations and impeding socio-economic development⁸. It has been observed that in Africa, approximately 50 million people are on the brink of falling below the poverty line for reasons connected to climate change while 100 million people are at risk of being displaced by climate change⁹. Climate change is therefore a major threat to Sustainable Development in Africa¹⁰.

Sustainable Development Goal 13 under the United Nations 2030 Agenda for Sustainable Development urges all countries to take urgent action to combat climate change and its

³ Ibid

⁴ United Nations Environment Programme., 'Responding to Climate Change' Available at <https://www.unep.org/regions/africa/regional-initiatives/responding-climate-change> (Accessed on 15/02/2024)

⁵ Ibid

⁶ Ibid

⁷ Kimaro. Didas et al., 'Climate Change Mitigation and Adaptation in ECA/SADC/COMESA Region: Opportunities and Challenges.' Op Cit

⁸ Rao. V., & Yadav. P., 'Confronting Climate Change in Africa.' Available at <https://knowledge.insead.edu/responsibility/confronting-climate-change-africa> (Accessed on 15/02/2024)

⁹ African Development Bank Group., 'Climate Change in Africa.' Available at <https://www.afdb.org/en/cop25/climate-change-africa> (Accessed on 15/02/2024)

¹⁰ Ibid

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impacts¹¹. In addition, Africa Union's Agenda 2063 seeks to reduce the vulnerability of the continent to climate change through building environmentally sustainable and climate resilient economies and communities in Africa¹². It has been pointed out that Africa has the potential to adopt innovative approaches in addressing climate change¹³. To this end, indigenous knowledge has been advocated as a key tool for climate action in Africa¹⁴.

This paper critically discusses the role of indigenous knowledge in addressing the impacts of climate change in Africa. The paper defines indigenous knowledge. It argues that Africa is endowed with indigenous knowledge which can be effective in responding to climate change. The paper examines the progress made towards utilizing indigenous knowledge for climate action in Africa and challenges thereof. It also offers suggestions towards harnessing indigenous knowledge for climate action in Africa.

¹¹ United Nations General Assembly., 'Transforming Our World: the 2030 Agenda for Sustainable Development.' 21 October 2015, A/RES/70/1., Available at <https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf> (Accessed on 15/02/2024)

¹² Africa Union., 'Agenda 2063: The Africa we Want' Available at https://au.int/sites/default/files/documents/33126-doc-framework_document_book.pdf (Accessed on 15/02/2024)

¹³ United Nations Environment Programme., 'Africa Offers Creative Solutions to Climate Change - Here are 3 of Them' Available at <https://climatepromise.undp.org/news-and-stories/africa-offers-creative-solutions-climate-change-here-are-3-them#:~:text=It%20has%20increased%20its%20ambition,implementing%20more%20robust%20adaptation%20actions.> (Accessed on 15/02/2024)

¹⁴ Attoh, E., & Ajayi, O., 'Indigenous Knowledge and Climate Change Adaptation in Africa: A Systematic Review' Available at <http://www.cabi.org/cabreviews> (Accessed on 15/02/2024)

2.0 Defining Indigenous Knowledge

Indigenous Peoples have been defined as distinct social and cultural groups that share collective ancestral ties to the lands and natural resources where they live, occupy or from which they have been displaced¹⁵. The land and natural resources on which they depend are inextricably linked to their identities, cultures, livelihoods, as well as their physical and spiritual well-being¹⁶. In addition, it has been pointed out that indigenous peoples often subscribe to their customary leaders and organizations for representation that are distinct or separate from those of the mainstream society or culture¹⁷. It has been observed that over time, indigenous peoples around the world have preserved distinctive understandings, rooted in cultural experience, that guide relations among human, nonhuman, and other-than-human beings in specific ecosystems¹⁸. These understandings and relations constitute a system broadly identified as indigenous knowledge, also called traditional knowledge or aboriginal knowledge¹⁹. It has been asserted that indigenous knowledge is the vehicle through which the principles of indigenous worldviews, beliefs, traditions, practices, and institutions are transmitted and put into practice²⁰. This knowledge is characteristically local in scale, transmitted orally, collectively owned, holistic in perspective, and adaptive in nature²¹.

Indigenous knowledge also referred to as traditional knowledge or aboriginal knowledge has been broadly defined as a cumulative, collective body of knowledge, experience, and values held by societies with a history of subsistence²². It has also been defined as any knowledge originating from a local or traditional community that is the result of

¹⁵ The World Bank., 'Indigenous Peoples' Available at <https://www.worldbank.org/en/topic/indigenouspeoples#:~:text=Indigenous%20Peoples%20are%20distinct%20social,which%20they%20have%20been%20displaced> (Accessed on 15/02/2024)

¹⁶ Ibid

¹⁷ Ibid

¹⁸ Bruchac. M., 'Indigenous Knowledge and Traditional Knowledge' Available at https://link.springer.com/referenceworkentry/10.1007/978-1-4419-0465-2_10 (Accessed on 15/02/2024)

¹⁹ Ibid

²⁰ Mistry. J et al., 'Indigenous Knowledge' *International Encyclopedia of Human Geography.*, (2020) pp 211-215

²¹ Ibid

²² Ellis, S.C., "Meaningful consideration? A review of traditional knowledge in environmental decision making," *Arctic* (2005): 66-77, at p. 66.

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intellectual activity and insight in a traditional context, including know-how, skills, innovations, practices and learning, where the knowledge is embodied in the traditional lifestyle of a community, or contained in the codified knowledge systems passed on from one generation to another²³. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), local and indigenous knowledge refers to the understandings, skills and philosophies developed by societies with long histories of interaction with their natural surroundings²⁴. UNESCO further points out that for rural and indigenous peoples, local knowledge informs decision-making about fundamental aspects of day-to-day life²⁵. It has been pointed out that the term indigenous knowledge is not limited to a specific technical field, and may include agricultural, environmental or medical knowledge, and knowledge associated with genetic resources among other forms of knowledge²⁶.

Indigenous knowledge can also be understood as the wisdom, techniques, approaches, skills, practices, philosophies, and uniqueness of knowledge within a given culture, which is developed by local communities over years through the accumulation of experiences and informal experiments, and based on an intimate understanding of local contexts²⁷. Indigenous knowledge is rooted in the deep connection that communities have with their land, resources and environment²⁸. This knowledge is usually transmitted via oral and practiced traditions from one generation to another²⁹. It has been pointed out that indigenous knowledge has been developed and nurtured by

²³ African Regional Intellectual Property Organization (ARIPO), *Swakopmund Protocol on the Protection of Traditional Knowledge and Expressions of Folklore*, Adopted by the Diplomatic Conference of ARIPO at Swakopmund (Namibia) on August 9, 2010.

²⁴ United Nations Educational, Scientific and Cultural Organization., 'Local and Indigenous Knowledge Systems (LINKS)' Available at <https://en.unesco.org/links> (Accessed on 15/02/2024)

²⁵ Ibid

²⁶ African Regional Intellectual Property Organization (ARIPO), *Swakopmund Protocol on the Protection of Traditional Knowledge and Expressions of Folklore*, Op Cit

²⁷ Filho. W et al., 'The Role of Indigenous Knowledge in Climate Change Adaptation in Africa' Available at <https://doi.org/10.1016/j.envsci.2022.06.004> (Accessed on 15/02/2024)

²⁸ Ibid

²⁹ Ibid

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communities around the world for generations³⁰. Indigenous knowledge encompasses a deep understanding of local ecosystems, the behavior of wildlife, the medicinal properties of plants, weather patterns, and the complex interconnections between nature and human society among other phenomena³¹. It is not only an accumulation of practical knowledge but also a way of life, deeply intertwined with cultural traditions, rituals, and beliefs³². Indigenous knowledge can therefore be understood as know-how that is unique to a given society³³.

It has been observed that indigenous knowledge and practices have many benefits to humanity and the environment³⁴. It has been argued that as the world grapples with escalating environmental challenges including as climate change, deforestation, habitat loss, and biodiversity depletion, there is a growing recognition of the invaluable contributions that indigenous knowledge systems can make to environmental conservation³⁵. In addition, it has been correctly observed that indigenous people, who have lived in harmony with their natural surroundings for generations, possess a wealth of knowledge about their local ecosystems, sustainable resource management practices, and unique cultural perspectives that can play a pivotal role in shaping effective conservation strategies³⁶. As a result, it has been opined that traditional ecological knowledge is believed to represent experience acquired over thousands of years of direct human contact with the environment³⁷. Indigenous knowledge has been effectively

³⁰ Ibid

³¹ EurAsia Carbon., 'The Role of Indigenous Knowledge in Environmental Conservation' Available at https://www.linkedin.com/pulse/role-indigenous-knowledge-environmental-conservation-eurasia-carbon?utm_source=share&utm_medium=member_android&utm_campaign=share_via (Accessed on 15/02/2024)

³² Ibid

³³ Sergon. P., Akoth. S., & Dzinekou. J., 'The Role of Indigenous Knowledge: Practices and Values in Promoting Socio-Economic Well-Being and Equity Among Endorois Community of Kenya' Available at <https://doi.org/10.1177/11771801221086724> (Accessed on 15/02/2024)

³⁴ EurAsia Carbon., 'The Role of Indigenous Knowledge in Environmental Conservation' Op Cit

³⁵ Ibid

³⁶ Ibid

³⁷ Muigua. K., 'Mainstreaming Traditional Ecological Knowledge in Kenya for Sustainable Development' Available at <https://kmco.co.ke/wp-content/uploads/2019/08/Mainstreaming-Traditional-Ecological->

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utilized to foster environmental conservation through sustainable resource management, biodiversity conservation, and climate change mitigation and adaptation³⁸.

The role of indigenous knowledge in environmental conservation is recognized under the *Convention on Biological Diversity*³⁹. The Convention requires each contracting party to as far as possible and as appropriate respect, preserve and maintain *knowledge, innovations and practices of indigenous and local communities* embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such *knowledge, innovations and practices* and encourage the equitable sharing of the benefits arising from the utilization of such *knowledge, innovations and practices*(Emphasis added)⁴⁰. In addition, the Convention requires parties to as far as possible and as appropriate protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements⁴¹. The Convention on Biological Diversity has been hailed as being the only international treaty that specifically acknowledges the role of indigenous knowledge, innovations, and practices in biodiversity conservation and Sustainable Development, as well as the need to guarantee their protection, whether through intellectual property rights (IPRs) or other means⁴².

In addition, the *United Nations Declaration on the Rights of Indigenous Peoples*⁴³ recognizes that respect for indigenous knowledge, cultures and traditional practices contributes to

[Knowledge-in-Kenya-for-Sustainable-Development-Kariuki-Muigua-23rd-August-2019.pdf](#) (Accessed on 15/02/2024)

³⁸ EurAsia Carbon., 'The Role of Indigenous Knowledge in Environmental Conservation' Op Cit

³⁹ United Nations., 'Convention on Biological Diversity' [1993] ATS 32 / 1760 UNTS 79 / 31 ILM 818 (1992).

⁴⁰ Ibid, article 8 (j)

⁴¹ Ibid, article 10 (c)

⁴² Muigua. K., 'Harnessing Traditional Knowledge for Environmental Conflict Management in Kenya' Available at <https://kmco.co.ke/wp-content/uploads/2018/08/TRADITIONAL-KNOWLEDGE-AND-CONFLICT-MANAGEMENT-29-SEPTEMBER-2016.pdf> (Accessed on 15/02/2024)

⁴³ United Nations., 'United Nations Declaration on the Rights of Indigenous People.' Available at https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf (Accessed on 15/02/2024)

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sustainable and equitable development and proper management of the environment⁴⁴. The Convention provides that indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts⁴⁵. In addition, it also provides that indigenous peoples also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions⁴⁶. The Declaration requires states in conjunction with indigenous peoples, to take effective measures to recognize and protect the exercise of these rights⁴⁷.

At a national level, the Constitution of Kenya recognises culture as the foundation of the nation and as the cumulative civilization of the Kenyan people and nation⁴⁸. It requires the state to inter alia recognise the role of science and indigenous technologies in the development of the nation⁴⁹; and promote the intellectual property rights of the people of Kenya⁵⁰. Further, with respect to the environment, the state is obligated to protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities⁵¹. The Constitution of Kenya therefore requires the state to not only protect the indigenous knowledge of the people of Kenya but to also actively promote the use of this knowledge for environmental protection and conservation for Sustainable Development.

⁴⁴ Ibid, Preamble

⁴⁵ Ibid, Article 31 (1)

⁴⁶ Ibid

⁴⁷ Ibid, Article 31 (2)

⁴⁸ Constitution of Kenya, 2010., Article 11 (1), Government Printer, Nairobi

⁴⁹ Ibid, article 11 (b)

⁵⁰ Ibid, article 11 (c)

⁵¹ Ibid, article 69 (1) (c)

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In addition, the *Protection of Traditional Knowledge and Cultural Expressions Act*⁵² was enacted to provide a framework for the protection and promotion of traditional knowledge and cultural expressions in Kenya. The Act defines traditional knowledge as any knowledge originating from an individual, local or traditional community that is the result of intellectual activity and insight in a traditional context, including know-how, skills, innovations, practices and learning, embodied in the traditional lifestyle of a community; or contained in the codified knowledge systems passed on from one generation to another including agricultural, environmental or medical knowledge, knowledge associated with genetic resources or other components of biological diversity, and know-how of traditional architecture, construction technologies, designs, marks and indications⁵³. The Act requires both national and county governments to promote the protection of traditional knowledge and cultural expressions from misuse and misappropriation⁵⁴.

Indigenous knowledge is therefore a concept that is well embedded at international and national levels. There is need to effectively harness this knowledge for climate action.

3.0 Indigenous Knowledge and Climate Action in Africa: Promises and Pitfalls

It has been noted that Africa is particularly affected by climate change due to its exposure to climate hazards, high vulnerability, and low adaptive capacity⁵⁵. Yet, Africa is also a continent rich in indigenous and local knowledge that has a long history of informing responses to climatic variability and change⁵⁶. Indigenous knowledge can therefore be effectively harnessed for enhanced climate action in Africa⁵⁷.

⁵² Protection of Traditional Knowledge and Cultural Expressions Act., Cap 218A Laws of Kenya

⁵³ Ibid, S 2

⁵⁴ Ibid, S 4 & 5

⁵⁵ Filho. W et al., 'The Role of Indigenous Knowledge in Climate Change Adaptation in Africa' Op Cit

⁵⁶ Ibid

⁵⁷ Ibid

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It has been pointed out that indigenous people in Africa like those in other parts of the world have proved to be good custodians of their environment⁵⁸. Over a long period, indigenous people in Africa and other parts of the world have assimilated detailed knowledge about the functionality of their immediate environment through experiences, insights into nature and society relationship, and communal and institutional practices developed by keen observations, monitoring, innovation, practice, and experimentation⁵⁹. It has been argued that over the years, indigenous people in Africa have developed deep and sophisticated indigenous knowledge systems, based on their observations and interactions with the environment over generations, that have enabled them to harness ecosystem services to support their livelihoods and survive socioecological changes including climate change⁶⁰. It has further been asserted that as climate change became a prominent global priority, understanding the importance and effectiveness of indigenous knowledge systems has also increased, especially how indigenous knowledge and practices can be harnessed to foster effective adaptation and mitigation actions⁶¹.

Climate change and climatic extremes adversely affect the adaptive capacity of indigenous communities in Africa and across the world, particularly those who rely on rainfed agriculture for their livelihoods⁶². It has been correctly asserted that indigenous peoples depend on natural resources for their livelihood and they often inhabit diverse but fragile ecosystems⁶³. Therefore, for indigenous peoples around the world, climate change brings different kinds of risks and opportunities, threatens cultural survival and

⁵⁸ Attoh. E., & Ajayi. O., 'Indigenous Knowledge and Climate Change Adaptation in Africa: A Systematic Review' Op Cit

⁵⁹ Ibid

⁶⁰ Zougmore. R., Segnon. A., & Thornton. P., 'Harnessing Indigenous Knowledge and Practices for Effective Adaptation in the Sahel' Available at <https://doi.org/10.1016/j.cosust.2023.101389> (Accessed on 16/02/2024)

⁶¹ Ibid

⁶² Filho. W et al., 'The Role of Indigenous Knowledge in Climate Change Adaptation in Africa' Op Cit

⁶³ Nilsson. C., 'Climate Change from an Indigenous Perspective: Key Issues and Challenges' Available at https://www.iwgia.org/images/publications/IA%201-2_08_Climate_Change_from_ind_perspective.pdf (Accessed on 16/02/2024)

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undermines indigenous human rights⁶⁴. The consequences of ecosystem changes have implications for the use, protection and management of water, wildlife, fisheries and forests among other natural resources, affecting the customary uses of culturally and economically important species and resources⁶⁵. It has been pointed out that despite having contributed the least to greenhouse gas emissions, indigenous peoples are the ones most at risk from its consequences due to their dependence upon and close relationship with the environment and its resources⁶⁶.

In light of the threat of climate change to indigenous communities, it has been pointed out that the communities, particularly those in hazard-prone areas, have developed a good understanding and knowledge of disaster prevention and mitigation, early warning, preparedness and response, and post disaster recovery⁶⁷. This knowledge is often based on facts that are known or learnt from experience or acquired through observation and practice, and is handed down from generation to generation⁶⁸. Indigenous knowledge is therefore recognised for its potential to play a key role in climate change adaptation, resources governance, conservation, and sustainable use of biodiversity and ecosystems⁶⁹. Indigenous and local knowledge can thus make an important contribution to climate change policy and Sustainable Development Goal 13 on climate action; by observing changing climates, evolving methods to convert observation and knowledge into relevant data, adapting to impacts and contributing to global mitigation efforts⁷⁰. It has been pointed out that indigenous communities in Africa easily identify with indigenous knowledge systems, which have enabled them to live

⁶⁴ Ibid

⁶⁵ Ibid

⁶⁶ Ibid

⁶⁷ United Nations Educational, Scientific, and Cultural Organization., 'Harnessing Indigenous Knowledge for Climate Risk Management' Available at <https://www.unesco.org/en/articles/harnessing-indigenous-knowledge-climate-risk-management> (Accessed on 16/02/2024)

⁶⁸ Ibid

⁶⁹ Filho. W et al., 'The Role of Indigenous Knowledge in Climate Change Adaptation in Africa' Op Cit

⁷⁰ United Nations Educational, Scientific, and Cultural Organization., 'Harnessing Indigenous Knowledge for Climate Risk Management' Op Cit

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sustainably with their environments for generations⁷¹. These indigenous knowledge systems also function as essential tools in environmental conservation and natural disaster management⁷².

Indigenous knowledge has been to a certain extent harnessed for climate action in Africa. For example, it has been observed that Nganyi rainmakers in western Kenya are one of the most renowned indigenous forecasters, with the consistency in the accuracy of their weather predictions⁷³. It has been pointed out that the rainmakers observe the flora and fauna in the Nganyi forest shrine to predict weather conditions which predictions have proved as accurate as forecasts made through scientific equipment⁷⁴. The community preserves the local forest which is used as a shrine by rainmakers that serves as a means of rainfall observations and prediction, with the knowledge passed down the generations through select families who take the community role of rainmakers⁷⁵. This forecast would then be disseminated in the local language through a community-based radio station⁷⁶. This knowledge is vital in climate action since it prepares it enables the community to prepare adequately for planting and harvesting seasons and serve as a safeguard against unpredictable weather patterns⁷⁷.

In addition, it has been pointed out that indigenous knowledge has been effectively used for climate adaptation in the Sahel region⁷⁸. The Sahel region which is a semiarid and

⁷¹ Africa Policy Research Institute., 'Harnessing Local Knowledge through Community-Based Interventions' Available at <https://afripoli.org/harnessing-local-knowledge-through-community-based-interventions> (Accessed on 16/02/2024)

⁷² Ibid

⁷³ Ibid

⁷⁴ Esipisu. I., 'Nganyi: The Tiny Forest in Kenya that Predicts the Weather' Available at <https://news.mongabay.com/2016/02/nganyi-the-tiny-forest-in-kenya-that-can-predict-the-weather/#:~:text=%E2%80%9CRainmakers%E2%80%9D%20in%20the%20Bunyore%20community,forecasts%20made%20through%20scientific%20equipment>. (Accessed on 16/02/2024)

⁷⁵ Africa Policy Research Institute., 'Harnessing Local Knowledge through Community-Based Interventions'

⁷⁶ Ibid

⁷⁷ Ibid

⁷⁸ Zougmore. R., Segnon. A., & Thornton. P., 'Harnessing Indigenous Knowledge and Practices for Effective Adaptation in the Sahel' Op Cit

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transitional zone between the Sahara desert and the Sudanian savannas has been identified as a 'hotspot' not only of climate change exposure but also climate change impacts and is considered as one of the most vulnerable regions in Africa⁷⁹. As a result local communities in the Sahel have developed extensive knowledge and understanding of their environment and climate that enables them to harness ecosystem services to support their livelihoods and survive environmental changes⁸⁰. They have adopted practices that are based on indigenous knowledge such as traditional integrated soil and water management practices to combat land degradation and improve soil productivity, farmer-managed natural tree regeneration practices, tailored shrub-based conservation agriculture system, effective mobility-based adaptation strategies by pastoralists, and modification of the variety of crops and crop varieties to respond to climate change⁸¹.

Indigenous knowledge has also been effectively utilized for conserving biodiversity in Africa⁸². It has been pointed out that indigenous peoples' traditional ecological knowledge, traditional systems of control, use and management of lands and resources, and traditional institutions for self-governance contribute substantially to conservation of biodiversity⁸³. For example, trees which were traditionally regarded as housing spirits or sacred were not be felled without performing rituals, thus achieving a protective effect on conservation of trees such as the mugumo tree among the Gikuyu community of Kenya⁸⁴; animals in a particular habitat may be regarded as sacred and are therefore protected from hunting⁸⁵; sacred groves or forests are pieces of land set aside for spiritual purposes, as shrines thus protected from encroachment⁸⁶; and indigenous plants are used

⁷⁹Ibid

⁸⁰ Ibid

⁸¹ Ibid

⁸² Muigua. K., 'Fostering a Human Rights Approach to Biodiversity Conservation in Kenya' Available at <https://kmco.co.ke/wp-content/uploads/2021/11/Fostering-a-Human-Rights-Approach-to-Biodiversity-Conservation-in-Kenya-Kariuki-Muigua-November-2021.pdf> (Accessed on 16/02/2024)

⁸³ Ibid

⁸⁴ Ibid

⁸⁵ Hens L, 'Indigenous Knowledge and Biodiversity Conservation and Management in Ghana' (2006) 20 *Journal of Human Ecology* 21, 24; Brown, C., Tacio, H. D., & Ishikawa, M. (eds), *In Search of Excellence: Exemplary Forest Management in Asia and the Pacific* (FAO, Regional Office for Asia and the Pacific 2005).

⁸⁶ Ibid

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in preventing and curing diseases in plants, animals and humans thus guaranteeing their protection and conservation⁸⁷. It has been pointed out that throughout Africa, the regular use of different but interrelated forms of indigenous and traditional ecological knowledge in conservation of biodiversity is significant⁸⁸. These include taboos and totems, customs and rituals, rules and regulations, metaphors and proverbs, traditional protected areas (social institutions), local knowledge of plants, animals and landscapes, and resource management systems⁸⁹. These forms of indigenous knowledge play a significant role in biodiversity conservation and protection of indigenous communities from the impacts of climate change⁹⁰. Indigenous people in Africa therefore serve as stewards of biodiversity-rich areas⁹¹. Their knowledge of sustainable resource management is invaluable for preserving ecosystems and combating habitat loss⁹².

Indigenous knowledge has also enabled African communities to embrace climate resilient agricultural practices⁹³. It has been pointed out that traditional agricultural practices like agro forestry, intercropping, crop rotation, cover cropping, traditional organic composting and integrated crop-animal farming are practiced throughout Africa and have the potential for enhancing crop productivity and mitigating the impacts of climate change⁹⁴. Indigenous people in Africa practise mixed farming where organic manure in the form of plant remains, cow dung and urine, and chicken droppings is applied to gardens to improve soil fertility as they are good sources of organic fertilizer

⁸⁷ Ibid

⁸⁸ Sinthumule. N., 'Traditional Ecological Knowledge and its Role in Biodiversity Conservation: A Systematic Review' *Frontiers in Environmental Science.*, Volume 11 (2023)

⁸⁹ Ibid

⁹⁰ Ibid

⁹¹ Latief. A., 'Harnessing Indigenous Knowledge for Climate Change Resilience in Africa' Available at https://www.linkedin.com/pulse/harnessing-indigenous-knowledge-climate-change-africa-aatifah-latief/?utm_source=share&utm_medium=member_android&utm_campaign=share_via (Accessed on 16/02/2024)

⁹² Ibid

⁹³ Rinku . S & Singh. G., 'Traditional Agriculture: A Climate-Smart Approach for Sustainable Food Production' *Energy, Ecology and Environment*, No. 2 of 2017, 296

⁹⁴ Ibid

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which tends to promote organic farming⁹⁵; and the use of nitrogen fixing pulses in mixed cropping, growing of plants of different patterns, maturity and duration which assists significantly in stabilizing soil fertility and prevention of soil erosion⁹⁶. It has been pointed out that such practices are an effective way to biologically manage pests and diseases⁹⁷. In addition, they also conserve biodiversity of animal and biannual crops and plants while reducing labour costs⁹⁸. Further, trees are planted in gardens to provide shade for the plants, to act as wind breaks, and also to demarcate people's farmlands and homes⁹⁹. Indigenous communities in Africa have also developed sophisticated water management systems, from rainwater harvesting to aquifer management among others¹⁰⁰. As a result, harnessing such indigenous knowledge would help in achieving food security throughout Africa, conserving water, mitigating climate change and ensuring biodiversity conservation¹⁰¹.

It has also been pointed out that throughout the continent, the integration of community-based forecasting and scientific forecasting has been successfully demonstrated to provide early warning weather and climate information for local communities in Malawi, Kenya, Ghana, Ethiopia, Uganda, South Africa, Swaziland and Tanzania among other countries¹⁰². In addition, it has been noted that for early warning systems, farmers have developed special techniques for gathering, predicting, and interpreting certain indicators to anticipate the weather or seasonal climatic conditions for farm decision-making¹⁰³. This is as a result of the long-term experiences of indigenous communities in Africa through the interaction with their immediate environment has enabled them to

⁹⁵ Gathogo J, 'Environmental Management and African Indigenous Resources: Echoes from Mutira Mission, Kenya (1912-2012)' (2013) 39 *Studia Historiae Ecclesiasticae* 33, at 37.

⁹⁶ *Ibid*

⁹⁷ *Ibid*

⁹⁸ *Ibid*

⁹⁹ *Ibid*

¹⁰⁰ Latief. A., 'Harnessing Indigenous Knowledge for Climate Change Resilience in Africa' *Op Cit*

¹⁰¹ *Ibid*

¹⁰² Africa Policy Research Institute., 'Harnessing Local Knowledge through Community-Based Interventions' *Op Cit*

¹⁰³ Attoh. E., & Ajayi. O., 'Indigenous Knowledge and Climate Change Adaptation in Africa: A Systematic Review' *Op Cit*

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identify certain indigenous ecological indicators that are explored to predict the weather and seasonal climate¹⁰⁴. Indigenous communities in Africa have therefore developed the ability to read natural signs and predict weather patterns¹⁰⁵. Integrating this knowledge into climate forecasting systems can enhance preparedness for extreme weather events¹⁰⁶. From the foregoing, it is evident that harnessing indigenous knowledge can enhance climate action in Africa. However, it has been noted that indigenous knowledge is often marginalized or dismissed by mainstream scientific and governmental institutions¹⁰⁷. In addition, it has been asserted that indigenous communities in Africa often face threats to their lands and traditional territories, undermining their ability to practice sustainable resource management¹⁰⁸. It has also been pointed out that climate change brings additional vulnerabilities to indigenous peoples, which add to existing challenges, including political and economic marginalization, land and resource encroachments, human rights violations and discrimination¹⁰⁹. The potential threat of climate change to their very existence, combined with various legal and institutional barriers that affect their ability to cope with and adapt to climate change, makes climate change an issue of human rights and inequality to indigenous peoples and not merely an environmental issue¹¹⁰. It is therefore vital to harness indigenous knowledge in order to enhance climate action in Africa and foster the human rights of indigenous people¹¹¹.

4.0 Way Forward

In order to effectively harness indigenous knowledge for climate action in Africa, there is need to respect traditional ecological practices in Africa¹¹². Such practices have been carried out by indigenous communities in African for many centuries and remain a

¹⁰⁴ Ibid

¹⁰⁵ Latief. A., 'Harnessing Indigenous Knowledge for Climate Change Resilience in Africa' Op Cit

¹⁰⁶ Ibid

¹⁰⁷ EurAsia Carbon., 'The Role of Indigenous Knowledge in Environmental Conservation' Op Cit

¹⁰⁸ Ibid

¹⁰⁹ Nilsson. C., 'Climate Change from an Indigenous Perspective: Key Issues and Challenges' Op Cit

¹¹⁰ Ibid

¹¹¹ Ibid

¹¹² Latief. A., 'Harnessing Indigenous Knowledge for Climate Change Resilience in Africa' Op Cit

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valued asset in many societies of the world and Africa in particular¹¹³. It has been pointed out that for centuries, this accumulated knowledge gave the community a sense of relevance and self-esteem, sustained indigenous innovation, endogenous technological growth and employment¹¹⁴. In addition, indigenous knowledge strongly roots the foundation of the community's livelihoods by connecting the people to their land and natural resources¹¹⁵. As a result, it has been pointed out that one of key characteristic and core function of indigenous knowledge is the promotion of the sense of well-being of the community¹¹⁶. Indigenous knowledge has been effective in environmental conservation in Africa for many centuries through sustainable resource management, biodiversity conservation, and climate resilient agriculture among other ways¹¹⁷. However indigenous knowledge is often marginalized or dismissed by mainstream scientific and governmental institutions¹¹⁸. Therefore, in order to harness its potential, it is essential to recognize and respect indigenous knowledge¹¹⁹.

In addition, it is necessary to protect and safeguard the rights of indigenous people especially the right to land¹²⁰. It has been argued that indigenous communities often face threats to their lands and traditional territories, undermining their ability to practice sustainable resource management and other forms of indigenous knowledge vital for climate action¹²¹. It has been observed that government projects in many parts of the world often involve removing indigenous peoples from their traditional lands and territories¹²². Land and resource encroachments has been identified as a key threat to indigenous people threatening their human rights violations and resulting in

¹¹³ Sergon. P., Akoth. S., & Dzinekou. J., 'The Role of Indigenous Knowledge: Practices and Values in Promoting Socio-Economic Well-Being and Equity Among Endorois Community of Kenya' Op Cit

¹¹⁴ Ibid

¹¹⁵ Ibid

¹¹⁶ Ibid

¹¹⁷ EurAsia Carbon., 'The Role of Indigenous Knowledge in Environmental Conservation' Op Cit

¹¹⁸ Ibid

¹¹⁹ Ibid

¹²⁰ Ibid

¹²¹ Ibid

¹²² Nilsson. C., 'Climate Change from an Indigenous Perspective: Key Issues and Challenges' Op Cit

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discrimination¹²³. Some government policies and initiatives in Africa often lead to the eviction of indigenous peoples from their traditional lands¹²⁴. For example, the Endorois community, an indigenous community in Kenya was a victim of land injustices after the government of Kenya created Lake Hannington Game Reserve renamed Lake Bogoria Game Reserve, gazetted and declared it a game park in 1973¹²⁵. This action denied the property and land rights of Endorois community with families being forcefully ejected from their ancestral land¹²⁶. This resulted in a suit before the African Commission on Human and Peoples' Rights that found the government of Kenya guilty of violating the rights of the Endorois community¹²⁷. Such actions are threat to indigenous knowledge since they deny them access to ecological, cultural and spiritual resources which are vital in nurturing indigenous knowledge¹²⁸. It is therefore vital to ensure that the land rights of indigenous people are protected through measures such as participation in determining priorities and strategies for the development or use of their lands¹²⁹; obtaining the free and informed consent of the respective communities, prior to the approval of any project affecting their lands and resources¹³⁰; and ensuring that indigenous people benefit directly and equitably from the conservation and ecologically sustainable use of natural resources through mechanisms such as equitable benefit sharing arrangements¹³¹. It has been pointed out that protecting indigenous lands is a matter of justice and a way to safeguard invaluable ecological knowledge¹³².

There is also need to integrate indigenous knowledge into climate action efforts in Africa¹³³. It has been argued that by combining traditional wisdom with modern science

¹²³ Ibid

¹²⁴ Ibid

¹²⁵ Sergon. P., Akoth. S., & Dzinekou. J., 'The Role of Indigenous Knowledge: Practices and Values in Promoting Socio-Economic Well-Being and Equity Among Endorois Community of Kenya' Op Cit

¹²⁶ Ibid

¹²⁷ Ibid

¹²⁸ Ibid

¹²⁹ Muigua. K., 'Fostering a Human Rights Approach to Biodiversity Conservation in Kenya' Op Cit

¹³⁰ Ibid

¹³¹ Ibid

¹³² EurAsia Carbon., 'The Role of Indigenous Knowledge in Environmental Conservation' Op Cit

¹³³ Latief. A., 'Harnessing Indigenous Knowledge for Climate Change Resilience in Africa' Op Cit

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and technology, Africa can build resilient, sustainable, and equitable societies¹³⁴. Indigenous and local knowledge can provide valuable insights into climate adaptation strategies in Africa including rainwater harvesting, sustainable farming practices, and biodiversity conservation¹³⁵. It has been argued that by integrating indigenous knowledge with modern climate adaptation strategies, African countries can tap into a wealth of knowledge to address the science-policy-society interfaces and lead to sustainable results to address climate change¹³⁶. This calls for collaboration between states and indigenous communities in order to enhance climate action in Africa¹³⁷. It has been pointed out that collaboration with indigenous communities should be guided by ethical principles, including informed consent, fair compensation, and the recognition of intellectual property rights in order to effectively harness indigenous knowledge while safeguarding the rights and interests of indigenous communities¹³⁸.

Finally, it is necessary for governments to support cultural preservation through investing in efforts to preserve and transmit indigenous knowledge to future generations¹³⁹. Cultural preservation is a key measure of ensuring that indigenous knowledge is not lost and can be passed to future generations for utilization in ecological conservation¹⁴⁰. According to the United Nations, indigenous and traditional knowledge is at the core of indigenous identity, culture, languages, heritage and livelihoods, and its transmission from one generation to the next must be protected, preserved and encouraged¹⁴¹. It is therefore necessary for governments to promote preservation and

¹³⁴ Ibid

¹³⁵ Brown. C., 'Sustainable Solutions for Climate Change Adaptation in Africa: Combining Indigenous Knowledge and Modern Technology' Available at <https://sdgs.un.org/sites/default/files/2023-05/B38%20-%20Brown%20-%20Assessing%20African%20Led%20Science-Technological%20Innovation%20Approaches%20to%20Climate%20Change%20Adaptation.pdf> (Accessed on 16/02/2024)

¹³⁶ Ibid

¹³⁷ EurAsia Carbon., 'The Role of Indigenous Knowledge in Environmental Conservation' Op Cit

¹³⁸ Ibid

¹³⁹ Latief. A., 'Harnessing Indigenous Knowledge for Climate Change Resilience in Africa' Op Cit

¹⁴⁰ Ibid

¹⁴¹ United Nations., 'Indigenous People's Traditional Knowledge Must Be Preserved, Valued Globally, Speakers Stress as Permanent Forum Opens Annual Session' Available at <https://press.un.org/en/2019/hr5431.doc.htm> (Accessed on 16/02/2024)

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transmission of indigenous knowledge through strengthening indigenous education and documenting oral traditions and cultural practices¹⁴². This will enable future generations to utilize indigenous knowledge to address their environmental needs among other challenges¹⁴³.

Through the foregoing among other measures, indigenous knowledge will be effectively harnessed for climate action in Africa.

5.0 Conclusion

Africa is a continent that is rich in indigenous and local knowledge that has a long history of informing responses to climatic variability and change¹⁴⁴. Indigenous knowledge has been effectively utilized in Africa for many decades in responding to climate change and other environmental needs and challenges¹⁴⁵. It has been utilized in rainmaking, climate adaptation, biodiversity conservation, fostering climate resilient agriculture, and weather forecasting¹⁴⁶. Indigenous knowledge can therefore be effectively harnessed for enhanced climate action in Africa¹⁴⁷. However, the role of indigenous knowledge in climate action in Africa is hindered by challenges such as its marginalization or dismissal by mainstream scientific and governmental institutions and land injustices against indigenous people¹⁴⁸. It is necessary to harness indigenous knowledge in order to strengthen climate action in Africa. To achieve this, there is need to respect traditional ecological practices in Africa, protect and safeguard the rights of indigenous people especially the right to land, integrate indigenous knowledge into climate action efforts in Africa, and support cultural preservation through investing in efforts to preserve and

¹⁴² Ibid

¹⁴³ Latief. A., 'Harnessing Indigenous Knowledge for Climate Change Resilience in Africa' Op Cit

¹⁴⁴ Filho. W et al., 'The Role of Indigenous Knowledge in Climate Change Adaptation in Africa' Op Cit

¹⁴⁵ Attoh. E., & Ajayi. O., 'Indigenous Knowledge and Climate Change Adaptation in Africa: A Systematic Review' Op Cit

¹⁴⁶ Ibid

¹⁴⁷ Filho. W et al., 'The Role of Indigenous Knowledge in Climate Change Adaptation in Africa' Op Cit

¹⁴⁸ EurAsia Carbon., 'The Role of Indigenous Knowledge in Environmental Conservation' Op Cit

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transmit indigenous knowledge to future generations¹⁴⁹. Harnessing indigenous knowledge for climate action in Africa is a quest worth pursuing.

¹⁴⁹ Ibid

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