

# Dynamics of knowledge creation and use for disaster management in Chokwe district, Mozambique

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## Abstract

**Purpose** – Disaster management practices depend on societies' knowledge. As climate change rapidly reshapes knowledge, questions arise about how knowledge for disaster management is produced and (re) shaped in modern world and how effective it is to withstand the ever-growing frequency and magnitude of disasters. This paper discusses the dynamics of knowledge creation and its use for disaster management in Chokwe district, southern Mozambique.

**Design/methodology/approach** – The study reviews historical archives to identify how disaster management knowledge has changed from pre-colonization to the present.

**Findings** – Before colonization, local knowledge associated with traditions of asking gods and ancestors for rain and blessings in life prevailed. With colonization, around the 1500s, Portuguese rulers attempted to eliminate these local practices through an inflow of European settlers who disseminated scientific knowledge, built dams and irrigation schemes, which changed the region's knowledge base and regimes of flooding and drought. After independence in 1975, the new government nationalized all the private property, expelled the settlers and imposed a socialist order. All knowledge on disaster management was dictated by the new government; those against this new order were sent to re-education centers implanted nationwide. Centralization of knowledge and power was, therefore, implanted. Socialism collapsed by the 1990s, and over time, there has been an amalgam of different knowledge bases and attempts to recognize local disaster management practices.

**Originality/value** – The Chokwe case shows that knowledge for disaster management evolves with local socioeconomic, political and environmental changes.

**Keywords** Chokwe, Mozambique, Knowledge creation, Disaster management, Local knowledge, History

**Paper type** Research paper



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## 1. Introduction

Human-induced climate change (CC) is leading to harmful impacts, including extreme events, diseases, scarcity of water and food, and displacements. It disproportionately affects the poorest and most vulnerable, who influence least for greenhouse gas emissions (IPCC, 2023; Chancel *et al.*, 2023). The effects of disasters illustrate inequities starkly: “Between 2010 and 2020, human mortality from floods, droughts, and storms were 15 times higher in highly vulnerable regions compared to regions with very low vulnerability; this trend is expected to continue as approximately 3.3–3.6 billion people live now in contexts that are highly vulnerable to climate change” (IPCC, 2023, p. 5).

Dealing with CC and related disasters requires (updated) knowledge. Knowledge allows to plan and act more effectively and efficiently in the context of CC (IPCC, 2023). The knowledge base might be from the locals and used for what has been called autonomous adaptation or scientific that has been used to forge planned adaptation (Adger *et al.*, 2003). However, how has knowledge changed over time, and how robust is it now in informing climate change adaptation (CCA) and disaster risk reduction (DRR) practices? There is a need for more understanding of the dynamics of CCA and DRR knowledge production and reproduction and how this is framed in a broader socioeconomic and political setting. This paper delves into these concerns and examines the case of Chokwe district in Mozambique.

Local, traditional, indigenous knowledge and other related concepts are used interchangeably. For example, Raymond *et al.* (2010, p. 1767) interpret “Localised, experiential or indigenous knowledge” as local knowledge (LK). Other scholars discuss LK focusing on local beliefs and practices (Uddin, 2022), and Lia *et al.* (2016, p. 2) argue that LK varies from “explicit information to tacit and experientially based knowledge.”

Particularly, experiential knowledge (EK) implies knowing from direct contact with specific environments (Nimkulrat, 2016), so it develops localized socioecological structures (Needham *et al.*, 2020). In parallel, LK is “the entire system of concepts, beliefs, and perceptions that people in a particular setting hold about the world around them; it includes how they observe and validate new information and how knowledge is generated, stored, applied, and transmitted to others in that particular context” (WB, 1998, p. 7). Thus, considering LK a result of experiences and practices (Nugroho *et al.*, 2018) which shapes sustainable adaptation (Eriksen and Brown, 2011) emphasizing the harmony between humans and their surroundings through generational norms in the use of resources (Harper and Ibrahim, 2020), the paper uses LK as a concept involving EK, and we focus the analysis mainly on local population’s experiences, observations, beliefs and culture in DRR.

While LK is context-based and produced without any accredited scientific methodology, scientific knowledge (SK) is related to explicit knowledge resulting mainly from formal methods in natural and social sciences with more quantitative and global applications (Raymond *et al.*, 2010; Nyadzi *et al.*, 2021). Hence, we adopt SK as systematic and formal setting of perspectives that evolves precise and validated theories with universal dissemination and use.

Despite differences, LK and SK are dynamic and interact closely (Kohsaka and Rogel, 2021; Ruddle, 2000). Ambiguities in CC demand the link between SK and LK since both may face limitations, and the interactions may influence better adaptation (Mehta *et al.*, 2019). Some scholars argue that LK is not genuinely local because people meet with externals and experience other ways of dealing with similar issues, and they adapt the existing knowledge (Artur, 2011). There is increasing attention to the role of diverse forms of knowing and shaping nature-society relations, including scientific and local methods (Hulme, 2018; Nightingale *et al.*, 2022). The diversity and tensions between them are critical for dealing with the increasingly harmful impacts of disasters (IPCC, 2023). The way different pieces of knowledge are established and used, and their relationship varies, and tensions may occur between them and their respective representatives (Goldman *et al.*, 2015; Chakraborty and

Sherpa, 2021). Scientists recognize LK in CCA (IPCC, 2023; Son *et al.*, 2019). However, SK still dominates, with LK being marginalized into playing supporting roles or merely being integrated into scientific framings rather than being part of the framing itself. While the transference of SK to local populations is well explained, there is less evidence regarding how LK is translated to formal settings (Movik *et al.*, 2021).

To overcome the challenges related to knowledge interactions, there is a need to understand the epistemological and ontological perspectives of knowledge; that is, the realization of the existence of climate events (ontology) and how different communities deal with it (epistemology) (Goldman *et al.*, 2015). On this path, the study of LK and SK is a call to understand: (1) How local populations and scientists look at the phenomenon of CC and respond to local events; (2) The process by which local populations develop or erode their adaptation knowledge; and (3) How LK can contribute to better Government choices for enhancing local adaptive capacity. Thus, this paper tracks LK and SK of disaster management (DM) in Chokwe and attempts to answer how LK and SK on DM has changed over time and what implications this brings for DRR and CCA.

The paper is structured into three sections. The following section (Section 2) provides an overview of the methodology. Section 3 delves into the results and discussion of four periods, namely (1) knowledge and practices of DM before the colonial settlements; (2) dynamics of knowledge creation and use with the colonization, (3) after the independence and (4) during and after floods in 2000. Although the cutting line among these periods is nearly absent and practices encouraged in each period permeated the other, there is a perspective to show that each moment shaped distinct norms, values and practices that influenced DM.

## 2. Methodology

This paper uses a qualitative and historical approach. In the historical approach, the world is a historical entity consisting primarily of occurrences (McAllister, 2002). Communities behave differently based on their historical circumstances. Written documents allow researchers to trace a specific disaster, social, economic and cultural horizons over time, to have a holistic understanding of the current *status quo* (Bavel *et al.*, 2020). Historical research can include an interpretation to show dimensions and factors contributing to the occurrence of the past, written documents and conversations with historians (Elena *et al.*, 2009). Historical analyses are crucial to providing inclusive, progressive and detailed information about policies and institutions (Cheema *et al.*, 2016). Researchers have studied disasters and knowledge creation in different fields throughout history. For example, anthropologists used ethnography to examine gender, class, ethnicity and social status concerning DM practices (Bavel *et al.*, 2020). Besides, Kelman *et al.* (2016) used a historical perspective to explore the influence of history in understanding current research trends on CCA, and they concluded that learning from history helps create a better future toward resilience.

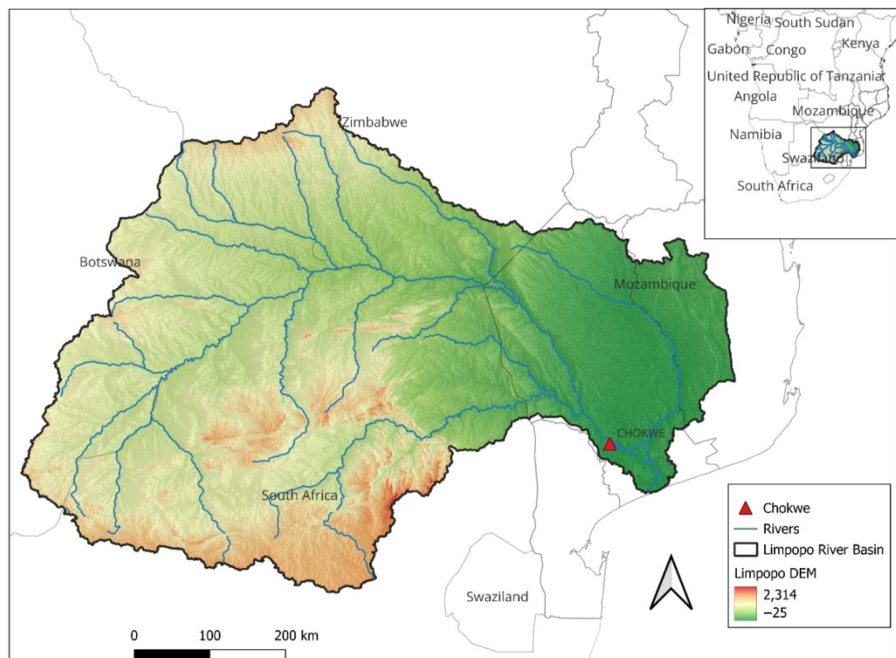
The historical approach used in this research implied a review of articles and reports related to Mozambican history. The archives and non-digitized manuscripts were found mainly at the Center of African Studies, Brazão Mazula Library at Eduardo Mondlane University and the Historical Archive of Mozambique, all based in Maputo. The data collection aimed to grasp CC, knowledge creation, LK and SK. Since these terms are uncommon in historical records, the methodological process established proxy terms: disasters, rituals, traditional ceremonies, droughts, floods, famine, ecology, environment, reforms, innovation and agriculture. Information about these proxy terms was filtered to explore the paper's theme. The reports and archives of evidence found to be helpful were manually organized, interpreted and presented as a discussion to show how the construction and reconstruction of DM knowledge in Chokwe was before the colonization to the present day.

The methodological process was done based on historiography methodology. Historiography is the writing of histories, looking at the changes over time because of ideologies. It aggregates various sources of information into specific contexts, with the possibility to include or exclude facts for the research. Under historiography, the focus of the writing process is on critical analyses. Historiography assesses the value of historical works in terms of modern standards (Raja *et al.*, 2020; Gunawan, 2017). Thus, the paper results from how we interpreted the history toward the current research trends in knowledge creation for CCA.

### 2.1 Background of the study area

This research is based on the Chokwe district, located along the Limpopo basin in southern Mozambique (Figure 1). The Limpopo Basin has around 14 million people across South Africa, Botswana, Zimbabwe and Mozambique (GWP, 2011). The basin has an estimated area of 415,000 Km<sup>2</sup>, of which 21% is in Mozambique (SARDC and IMERCSA, 2002).

The population in Chokwe live mainly through agriculture and other climate-sensitive livelihoods. Chokwe has a total population of 222,396 habitants, among them 122,755 women and 99,641 (INE, 2020). Zion, followed by protestant religions, is predominant in the district (Sequeira, 2017). The district is prone to cyclical disasters such as droughts, floods and cyclones (Governo do Distrito de Chokwe, 2012). Examination of past studies shows regular droughts and floods since pre-colonial times (see Table 1), as we shall see these disasters co-emerge with socio-political shifts, intersecting with the knowledge and strategies mobilized to manage these disasters.



**Figure 1.**  
Map of Limpopo basin

**Source(s):** Created by Bionidio Banze in March( 2024)

Year	Event	Summary
1774–1802	Droughts	It affected the southern region of Mozambique including Chokwe (Newitt, 2012)
1817–1823		Chokwe and other regions in the country were affected and broke agricultural communities (Harries, 1994)
1840s		Major droughts in Chokwe (Harries, 1994)
1862		Famine in the southern region due to droughts epidemics (Harries, 1994)
1870		Food shortage and production crises (Harries, 1994)
1954/55	Floods	Hydrological record; 7,800 m <sup>3</sup> /s in Chokwe (Dgedge, 2022)
1967		Flooding was announced in the Elephants and Limpopo Rivers (INGC et al., 2003)
1977–78		In Chokwe, people moved to communal villages (INGC et al., 2003)
1983–84	Droughts	South and Central Mozambique, including the Limpopo Basin (Christie and Hanlon, 2001)
1991–93		Limpopo river has dried up (Christie and Hanlon, 2001)
1994–95	Floods	South and Central of the country, including the Limpopo Basin, 1.5 million affected (Christie and Hanlon, 2001)
2000		Limpopo, Maputo, Umbeluzi, Buzi and Save rivers flooded, three cyclones occurred, the worst floods in 150 years (GFDRR, 2014)
2013		Many were displaced, and infrastructure was destroyed, Chokwe was affected (AfDB Group, 2020)
2016	Droughts	Farmers were affected, many received food assistance, including in Gaza (AfDB Group, 2020)
2023	Floods	February–March with cyclone Freddy early warning systems were activated

Source(s): Table by authors

**Table 1.**  
Disasters affecting  
Limpopo basin and  
Chokwe 1774–2023

### 3. Dynamics of knowledge creation and use for disaster management in Chokwe

Historical and broadly filtered, Chokwe had three main stages of knowledge creation: (1) Before the colonial settlements, (2) With colonial settlements and (3) Post-independence. Although these periods are not neatly distinguishable as practices permeated from one period to the other, we depict characteristics that dominated each era regarding knowledge and DM.

#### 3.1 Before the colonial settlements

Historically, people in Chokwe lived as collectors, fishers, farmers and handcraft workers. They settled in scattered communities into lineages and kinships. The scarcity of food contributed to migrations, conflicts and agreements to the extent of creating kingdoms such as the Gaza, of which Chokwe was part.

The institutionalization of Gaza Kingdom took place in 1821. Gaza had different social classes: the high aristocracy, the middle aristocracy and commoners. Apart from the King, the militaries, *Tinyanga* and local leaders such as regulos, sapandas and fumos were pivotal in the administration (Serra and Liesegang, 1982) and local leaders in coordinating with high aristocracy collected the tribute (Newitt, 2012; Santana, 2016).

From its institution up to its end in 1897, three kings ruled the Kingdom, and the establishment coincided with droughts in 1817–1823, which made the administration difficult (Santos, 2007; Abrahamsson and Nilsson, 1994; Departamento de Trabalho Ideológico do Partido Frelimo, 1978). Under drought, plunder in neighborhoods and searching for alternative livelihoods (migration and trade) were common (Newitt, 2012). However, in the context of DM, we highlight a meaningful action from the last king, Ngungunhane (1884–1895). According to historians, in 1889, military issues and increasing disasters forced Ngungunhane to change the capital of the kingdom from Mossurize in

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central Mozambique to Manjacaze (Santos, 2007; Serra and Liesegang, 1982). Changing the capital of a kingdom shows how environmental issues impact politics and how DM was also based on migrations and reconstruction of knowledge to deal with hazards in different places.

As part of local population's experiences, observations, beliefs and culture in DRR, big decisions such as changing the capital and organizing military actions were informed by spiritual leaders, locally called *Tinyanga*. *Tinyanga* worked as meteorological stations and provided recommendations to the Kingdom (Junod, 1996; Santana, 2016). Annually, in February, the *Tinyanga* performed the *Incuala* ceremony to request rain and good harvests from the ancestors (Serra and Liesegang, 1982). Depending on the identified cause of droughts, other ceremonies were performed. For example, if it was due to witchcraft, *Xibhutua* was performed to expel the witch from the region. When a drought was perceived to come from angry gods *Kupahla Mfula* (spilling beer and killing animals in a tree or grave while supplicating for rain) was performed to ask for their pardon (Feliciano, 1998). *NkElekeEle* was executed when they discovered that any baby, sterile woman, twin, or disabled person was buried on dry land. It was led by older women who sang, supplicating for rain while transferring the corpses to a place near the river or performing rituals with the burial pit opened (Feliciano, 1998; Ferreira, 1975). From experiences and observations in the area, local populations also learnt to read environmental cues and conclude that flood, drought, or any epidemic was likely to affect the communities: the sun, the moon, animal movements, wind speed and direction, flourishing of trees and other were local climate indicators (Artur, 2011). Following any harvest, again, local populations performed rituals to thank the gods and ancestors for the blessing, and the saga continued year after year.

These examples demonstrate the prevalence of a complex LK system based on experiences, observations, beliefs and culture in DRR and their connection with political authorities. Here, the king trusted the spiritual leaders, and their wisdom was vital in managing natural hazards, contributing to establishing social order. In hierarchical terms, DM practices were driven by a bottom-up approach, where the authorities embraced LK. The rituals and involvement of spiritual leaders were seen as part of the search for common well-being and coexistence in the Kingdom. However, this practice and the whole system of LK were challenged by colonization, as presented in the following sub-section.

### 3.2 With the colonization

The Gaza Kingdom, which Chokwe was part of, was the last kingdom the Portuguese had to confront for complete control of Mozambique. The decisive battle that led to the colonial presence was the Coolela battle on November 7, 1885. During the war, the Portuguese set fire to Ngungunhane's court in Manguanhana, and he moved to Chaimite where in a short time he was arrested by the Portuguese. Even with the king's arrest, the fight in Gaza continued (abruptly) under the command of Maguiguana, who was killed in 1897 in Mapalanguene (Martins, 1975).

With the Kingdom collapse in 1897, the colonial Portuguese authorities imposed new structures and started dismantling the local cultural heritage through different interventions. There was the dismantling of pre-existing social groups such as *Tinyanga* (Santana, 2016) and their replacement with the missionary Catholic churches, new educational structures and assimilation/aculturation policies, which challenged the local customs and reinforced the Portuguese culture and knowledge (Martins, 1975; Nunes, 1963; Departamento de Trabalho Ideológico do Partido Frelimo, 1978). To pursue the assimilation process, Portugal has often attempted coercively to connect with local leaders (regulos, sapandas and fumos) to mobilize the population. However, some leaders remained against it (Abrahamsson and Nilsson, 1994). The colonialists repudiated local practices, describing

them as non-scientific and backward (Mondlane, 1995; Martins, 1975). The new setting reshaped local populations' knowledge, especially in DM. The relationships between the colonial government and locals appeared to be that of submission, political disputes were evident and affected DM practices.

During colonization, *the modus operandi* in disasters did not follow a cohesive strategy. Records indicate that the population was lightly recommended to save surpluses to face food shortages (Matusse, 2009). Formalizing DM strategies, possibly, was not a priority for the Portuguese, but avoiding famine was in their interest because of the labor force. In the context of Chokwe, this would also be linked to agricultural investment, especially through Chokwe irrigation scheme.

Designed in the 1920s by Trigo de Morais, a Portuguese engineer, and built in the early 1950s, the irrigation scheme comprises 33 848 ha, and recent data show that the irrigated land occupies 10,000 ha, of which 7,500 ha are used for rice production and approximately 2,500 ha for vegetable production (Notiço, 2010). The scheme is a multifunctional infrastructure comprising a railway, highways and dams (Abbas, 2018). The highway is essential in the Limpopo transport corridor, which gives access to the port of Maputo and the interland countries: Zimbabwe, Botswana and Zambia (Saute and Mahoque, 2017) and the dam regulated the river's course, and from it the colonialists developed several canals (HPIP, 2024). Later, the scheme benefited from construction of the Massingir dam in the Elephant River, around 100 km upstream of Chokwe (Vaz *et al.*, 2008).

The scheme's construction had social implications since the local populations were moved out, and they had limited access to the river (Valá, 2002). From 1954, colonialists mainly occupied the area (Tanner *et al.*, 1993; Magaia, 2010) with a slight integration of locals (Hermele, 1986, 1988). Nevertheless, economically, the scheme influenced industrial and private land ownership. Rice production depended on technical and mechanical inputs from the colonialists (Henriksen, 1978), and few integrated locals began adapting to market production strategies (Tanner *et al.*, 1993; Valá, 2002; Rosário, 2021). Thus, the scheme meant the centralization of the colonizer's power and expansion of SK which the few locals with access to it were demanded to follow. The Portuguese ideology had a socioeconomic vision with a powerful influence to disconnect people from the philosophy of sense of place.

Overall, the Portuguese presence changed power structures, landscape, knowledge, social and economic lifestyles. With modernized agriculture; dams and irrigation scheme Portugal introduced new technologies and *Tinyanga* lost their influence in climate related activities. Portugal also found a way to influence the local population's mindset. Historians indicate that the colonial acculturation of Mozambique imposed unprecedented losses and damages on local norms, values and practices (Ngoenha, 1992). These norms, values and practices were linked to patterns of vulnerability to disasters and means of dealing with nature.

### 3.3 After the independence

**3.3.1 The fleeing of the Portuguese, communal village and the "new man".** Mozambique became independent on June 25, 1975. With the saga of independence, many colonialists fled the country, and some natives returned. The returnees to the research area brought new knowledge, the new government adopted a socialist system and started several socioeconomic reforms that impacted people's livelihoods and knowledge.

Under socialism, the local leaders who allegedly supported the colonialists were fired and replaced by neighborhood secretaries (*secretários de bairros*), ten houses' chiefs (*chefes de dez casas*) and dynamizing groups – *grupos dinamizadores* (Serra, 2000). Dynamizing groups were composed of people selected by the Frelimo party to motivate the local populations politically. Later, the Government transformed individual property ownership into state property and people were placed into communal villages-*aldeias comunais* (Chichava, 2013).

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Communal villages had political and administrative functions and created local courts (Newitt, 2012). The communal villages were inhabited by farmers and characterized by collective patterns of production for fast development, but this was seen as a cheap labor pool for the rural agriculture and industry left by the colonial authorities (Abrahamsson and Nilsson, 1994). This political development intersected directly with DM. In 1977 Chokwe was heavily flooded, and all flood-affected people were resettled in these newly imagined communal villages (Hermele, 1986; Abrahamsson and Nilsson, 1994). The communal villages were an economic and political space under the socialist ideology. Nevertheless, the disaster securitization discourse, that is, selling the idea that the communal villages were safe and secure from disasters justified the agenda of resettlement (Casal, 1996; Artur, 2011).

The resettlement in communal villages was not done willingly. Initially, peasants needed clarification to produce in collective farms and were also scared to give up on their farming and join to uncertainties in the collectiveness. In practice, communal villages involved moving people from one place to another and distancing them from their ancestors. In many cases, this meant the loss of a sense of belonging and knowledge (Egerö, 1987; Matusse, 2009). People showed their dissatisfaction in several ways. For instance, in the communal village Eduardo Mondlane, few members worked in collective farms, and their engagement ran in less than four months (Isaacman and Isaacman, 1983; Myers *et al.*, 1994). In other places, people used different strategies, such as escaping to far-reaching areas, sabotaging agricultural equipment and inputs, and joining the newly created rebel movement (Renamo) (Cabrita, 2000). Confronted with such attitudes, the new government started a massive campaign of labelling all people with such attitudes as enemies of the revolution-*inimigos da revolução* and they were captured and sent to re-education camps – *campos de reeducação* to create a new man – *homem novo* (Feijó, 2017; Cabrita, 2000; Machava, 2021). Re-education camps, communal villages and the new man agenda were tools to impose a new social order where evidently SK would prevail, and all traditional practices would vanish. So, village socialization did not go as planned; it was contested.

The new social order extended the power of SK and central control in environmental governance. Most of LK and practices were coined obscurantism and deserved no place. The government started to voice “abaixo o obscurantismo” (down with obscurantism), and practitioners were also sent to re-education camps (Lazagna, 2007). The relationship between the local populations and the new Government was somehow like that of the Portuguese, based on neglecting LK and coercively subjecting the locals to new structures (Matusse, 2009). People struggled to keep their knowledge base and attempted to avoid the homogeneous, top-down knowledge and practices proposed by the new government. Moreover, this SK was significantly politicized under the Cold War context. As Mozambique was following socialism, the country had limited knowledge and technologies coming from the West; it was mostly from the socialist block such as Russia, Cuba, North Korea and East Germany that the country had most of its SK.

The co-creation of knowledge had limited space to flourish. The authoritarian governments tended to neglect local practices and impose the completely so claimed SK. Still, because local people had access to both knowledge systems, many adopted what was valuable. According to archives, new agricultural practices such as fertilizers and pesticides or irrigation were adopted by some locals, keeping, however, their knowledge of weather forecasts, diversification of crops, rituals and other local practices (Serra, 2000). While for the Government the socialist strategies worked in two axes; the evil or unacceptable; LK and all good; SK. For local population, co-creation was possible; they just needed an opened space to harness the good in both axes. Lack of such flexibility somehow led to conflicts and support for the rebel movements that started civil war immediately after the independence. Overall, the political approach from Portuguese authorities mainly (with the missionary activities) and the socialist strategies (with the re-education camps) somehow aligns to the pedagogy of

the oppressed. According to Freire (2005), the approach considers education a way to change mindsets of people out of the acceptable social standards.

3.3.2 *Knowledge brokering after the civil war in 1992.* The civil war ended in 1992 with promises that a free elected government, capitalism and liberalism would replace socialism and state-centralized control. With this, many returnees, international NGOs and private actors emerged. In 1994, Mozambique had its first multiparty elections, and local people started to exercise their traditional practices freely; local authorities such as *regulos*, *sapandas* and *fumos* were actively incorporated as part of the government structure.

Humanitarian and development NGOs started to exercise their activities across the country, and the Department for Preventing and Combating Natural Disasters which worked during the civil war was replaced by the National Institute for Disaster Management seen as more proactive and updated to the current times and context. During this period, Mozambique developed its first National Policy on Disaster Management. Despite all these changes, little has transpired regarding CC, until the great flood of 2000 (Christie and Hanlon, 2001; Artur, 2011).

3.3.3 *From the 2000 floods to the present.* In 2000, the Limpopo basin experienced the great flood that claimed 700 people and caused countless economic, social and environmental losses (Christie and Hanlon, 2001). Dealing with it was a challenge for Mozambique (including Chokwe, a flood prone area) and different knowledge bases were used: (1) LK/Lived experiences from floods of 1977; (2) SK from Government and NGOs; (3) knowledge co-created through local and external knowhow. Although the response to the flood is interpreted as a milestone in interactions between LK and SK, the Government had limited and weak structures to deal with it. The lack of clear leadership and the amalgam of knowledge base brought tensions and contributed to vulnerability. For instance, based on previous experience, people did not follow official warnings. They waited until the last minute to be rescued, and this was a fatal error, and international NGOs had to lead the process (Christie and Hanlon, 2001).

The development of disaster-related policies took vital steps after the 2000 floods (Koivisto, 2020), which functioned as a wake-up call to impacts and gaps in DRR (Christie and Hanlon, 2001). After these floods, the discourse on CC began to emerge in the political agenda of Mozambique (Nachmany *et al.*, 2015) with structural transformations, including legal instruments and institutions. For example, in 2007, Mozambique elaborated its National Adaptation Programme of Action targeting early warning system and agricultural practices. Then, the 2013–2025 National Strategy for Climate Change was approved to reduce vulnerability to CC and improve the living conditions. Recently, the Presidential Decree 41/2020 established the competencies of the National Institute for Disaster Risk Management and Reduction (Maia *et al.*, 2019), revealing other proactive measures in CC.

Despite challenges, co-creation of knowledge between local communities and formal institutions is moderately gaining space in DRR. Trough community volunteer members who receive training and equipment from the Government, local committees work in DRR. However, the approach focuses on SK and limits LK. For example, a study in Guijá, a neighboring district of Chokwe, highlights that most of the local committees did not follow all instructions from the Government because there was a lack of resources and reduced local operational capacity (Julane, 2018) meaning that it is still necessary to direct strategies clearly considering LK and SK.

#### 4. Conclusion

This paper answers the question: *how local and scientific knowledge on disaster management has changed over time and what implications this brings for DRR and CCA in Chokwe?* Adopting LK as a concept involving EK we focused the analysis mainly people's experiences,

observations, beliefs and culture. Through historiography, we found that LK in DRR and CCA is not static; it needs to be seen under the specific socio-economic and political context. In Chokwe, the pre-colonial period was characterized by local practices regulated by *Tinyanga* and chieftaincies. The colonial and post-independence phases were characterized by rules and strategies to educate people through SK. The Portuguese colonials did it mainly through attempts to eliminate the spiritual leaders, and expansion of modern agricultural practices, and missionary activities. Then, the post-independence Government relied on dynamizing groups, communal villages and re-education camps. All these tended to distance local populations from LK and practices in favor of scientific thinking in DRR.

The collapse of socialism in early 1990s, the first elections in 1994 and the great floods in 2000 influenced the inflow of humanitarian and development NGOs as well as policies and institutions for DRR and CCA. These changes broke the previous conflicts caused by the attempt to misplace LK and despite challenges, marked the co-creation of knowledge in DRR. The key message from this research is that the imposition of a specific form of knowledge is expected to fail. Thus, DRR and CCA require the recognition of the relevance of all forms of knowledge, and this can only be reached by using participatory approaches and promotion of inclusive environment governance practices.

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