

ORIGINAL ARTICLE

Mind the gap: The fissure between aspirations and actions in climate change governance at a local government level: A study of the Eastern Cape Province of South Africa

Siyaxola Ernest Gadu  | Richard Kwame Adom  | Mulala Danny Simatele 

School of Geography, Archaeology and Environmental Studies, Faculty of Science, University of the Witwatersrand, Johannesburg, South Africa

Correspondence

Siyaxola Ernest Gadu and Richard Kwame Adom, School of Geography, Archaeology and Environmental Studies, Faculty of Science, University of the Witwatersrand, Johannesburg, South Africa.
Email: 0317491d@wits.students.ac.za and siya.rlg@gmail.com

Funding information

Global Change Institute, University of the Witwatersrand, Johannesburg, South Africa, Grant/Award Number: 900003000650; National Research Foundation, South Africa, Grant/Award Number: 129481

Abstract

It is no longer a myth that climate change-related disasters are on the rise globally, with severe and devastating consequences in developing countries, particularly in Sub-Saharan Africa, where many of the world's poor people reside. Thus, the emphasis on adaptation to climate change is no longer a choice or a deferred problem into the future, but rather an urgent matter of concern which must be considered a policy priority. As a response to retrogressive climate change challenges on social-economic development and environmental degradation, the government of South Africa has in the last two and half decades, embarked on the progressive formulation of different policy instruments and strategic frameworks to curb and minimize the impacts of climate change on all sub-sectors of the economy. Although much remains to be achieved, some level of success has been realized, particularly in the space of policy formulation, albeit the poor record of implementation. Using research methods inspired by the tradition of qualitative research and an appraisal of existing literature, this paper discusses the complexities of climate change adaptation governance at a local government level in South Africa, focusing on the Eastern Cape Province. It is argued in the paper that one of the major challenges for climate change governance at local municipality levels in South Africa emanates from the gap between aspirations and actions across the entire national governance system. The absence of an integrated climate change governance system has posed significant systemic challenges, and these have tended to constrain decision-making and implementation processes. These issues have been discussed within the broader discourse of the sustainable development goals, particularly goals number 13, 16 and 17.

KEYWORDS

climate change adaptation, climate change governance, institutional adaptive capacity, institutional reforms, South Africa

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2024 The Authors. *Climate Resilience and Sustainability* published by Royal Meteorological Society and John Wiley & Sons Ltd.

1 | INTRODUCTION

Climate change is one of the main pressing issues for the current generation, as it affects natural and human systems globally (Abegunde et al., 2019). Climate change is not just an environmental problem but also a complex and cross-cutting issue that threatens the economic and social stability of society (Dale et al., 2020; Samuels et al., 2022). Similarly, Patterson and Huitema (2019) concurred that climate change is adding to existing environmental and socio-economic challenges. The impacts of climate change affect an already complex social setting with limited resources (Brockhaus et al., 2012; Ndebele-Murisa, et al., 2020; Regmi & Bhandari, 2013; Thomas et al., 2019). Although there is a rich presence of literature on climate change adaptation, climate change remains a challenge for governments worldwide (Faling et al., 2012; Sietchiping, 2006). Subsequently, local governments across the world are not well prepared to deal with climate change-related complex challenges that are already manifesting (Baker et al., 2012).

Climate change-induced disasters such as droughts and floods are serious threats to livelihoods and well-being in Southern Africa (Kamara et al., 2018). In terms of the economic losses, drought is reportedly the main climate change-related threat in the agricultural sector in South Africa (Walz et al., 2020). Grecksch (2015) argued that climate change impacts have a potential to intensify the development challenges in South Africa. The Eastern Cape Province has been declared one of the most vulnerable provinces to climate change in the country (Santhia et al., 2018). This region has been exposed to devastating droughts in recent years. Inequality, poverty levels, food insecurity and losses of farm jobs (unemployment) have increased tremendously in the Eastern Cape due to climate change (Adom et al., 2022; Musemwa et al., 2013). Therefore, adaptation to climate change in this province is no longer an issue that can be deferred any longer and must be addressed now (Kashaigili et al., 2009; Sokona et al., 2021).

There is limited research that focuses on what South African municipalities are doing to pursue their climate change adaptation goals (Faling et al., 2012). Santhia et al. (2018) disclosed that there is the need to critically analyse the roles of the local government in understanding the past and current actions with respect to climate change adaptation. Most South African municipalities acknowledged the need for action on adaptation strategies and have an understanding and ideas of what must be done (Montmasson-Clair & Zwane, 2016). However, evidence for action is limited due to several challenges ranging from capacity issues to insufficient knowledge (Ziervogel et al., 2014). The local institutions are still struggling to adapt to

climate change (Santhia et al., 2018). This is due to host of challenges, such as the lack of political will and low prioritization of climate change (Pasquini & Shearing, 2014). A deeper understanding of actors, such as institutions, is required to overcome challenges in socio-ecological systems adaptation (Brockhaus et al., 2012).

While acknowledging that many scholars, policymakers and commentators have carried out numerous studies on the challenges of climate change adaptation in South Africa, what is missing in the various literature studies is concrete adaptation mechanisms to address climate challenges at the local levels. Considering these gaps, this paper examines the complexities and mechanisms that can address the challenges of climate change adaptation governance at a local level in South Africa, taking Eastern Cape Province as a focal point of analysis and discussion, under the following objectives: (1) to understand how the climate change manifests itself in different municipalities of the Eastern Cape Province, (2) to analyse the strengths and the weaknesses of the existing policy frameworks designed to promote climate change adaptation in the Eastern Cape Province and South Africa, (3) to examine the extent to which the policy framework allows the local government institutions to adapt to climate change in the Eastern Cape Province and (4) to explore challenges and barriers of climate change adaptation at local government level in South Africa.

2 | CLIMATE CHANGE ADAPTATION AND THE INSTITUTIONAL CONTEXT: A SYNTHESIS OF LITERATURE FROM A GLOBAL PERSPECTIVE

In response to climate change impacts or in anticipation of future risks posed by climate change, governments across the world (through its institutions) have the responsibility of adapting to climate change on behalf of society (Islam & Nursey-Bray, 2017). Similarly, Regmi and Bhandari (2013) opined that institutions are paramount for development, promotion, coordination and sustaining adaptation practices. Furthermore, local municipalities are considered the most accessible governing institutions to support vulnerable people to climate change (Santhia et al., 2018). Additionally, Tomaney (2014) disclosed that regional establishments are considered to function as mechanisms for mitigation and adaptation when a society is faced with new challenges. Local municipalities are considered essential, as they are at the vanguard of climate change adaptation at a regional level (Di Gregorio et al., 2019; Leck & Simon, 2018; Mees, 2017; Mees et al., 2019; Santhia et al., 2018). Thus, in the field of climate change, there is a consensus

among researchers that adaptation is a local or regional activity (Huitema et al., 2016; Mees et al., 2019; Pasquini & Shearing, 2014); possibly requiring some facilitation or assistance from higher level institutions (Huitema et al., 2016).

However, the realization of the importance of adaptation to climate change is a new notion globally (Dodman & Mitlin, 2013; Mees, 2017; Regmi & Bhandari, 2013), that is expected to be applied by institutions with old structural settings. These traditional institutional settings are too fragmented, sectoral and isolated (Regmi & Bhandari, 2013) to deal with a sectoral cross-cutting issue such as climate change adaptation. Hence, institutional changes or adjustments are considered essential to successfully adapt to the changing climate (Landauer et al., 2019; Mees, 2017). This assertion, therefore, speaks to the need for institutional reforms to adequately adapt to the changing climate for the benefit of society at large.

Siders (2019) argued that adaptive capacity is an essential component of long-term adaptation to climate change. Thus, the level of success of climate change adaptation is dependent on the adaptive capacity of institutions (Agrawal, 2010). Institutional adaptive capacity signifies the potential to implement adaptation measures that will assist in preventing or reducing the degree of possible impacts (Gbetibouo & Ringler, 2009; Tschakert & Dietrich, 2010). Thus, building the capacity of institutions is considered one of the fundamental phases of climate change adaptation (Santhia et al., 2018; Siders, 2019). Similarly, it is important to identify what enhances adaptive capacity or, similarly, what functions as barriers or limits to adaptations (Dale et al., 2020).

Africa is considered one of the most vulnerable regions to climate change (Leal Filho et al., 2018), especially the Sub-Saharan African countries (Kom et al., 2020). Poor communities in Sub-Saharan Africa are highly vulnerable to the impacts of climate change (Berhanu & Wolde, 2019; Dube & Phiri, 2013; Sibiya et al., 2022; Thomas et al., 2019). Climate change impacts are affecting the livelihoods and well-being of communities (Kamara et al., 2018). Therefore, adaptation to climate change in Sub-Saharan Africa is no longer considered a long-term objective, but a current necessity (Kom et al., 2020; Sibiya et al., 2022). Although developing countries have introduced environmental policies and regulations to tackle serious environmental issues such as climate change (Xie & Saltzman, 2000), African developing countries are struggling to adapt to climate change (Leal Filho et al., 2018). Agrawal (2010) argued that semi-arid and arid regions, like Sub-Saharan Africa, require great institutional reforms, if these regions are to successfully adapt to climate change impacts.

2.1 | Climate change adaptation and policy landscape in South Africa

South Africa is considered one of the regions that are most vulnerable to climate change (Elum et al., 2017), due to change in temperature and rainfall patterns (Busayo & Kalumba, 2021; Wale et al., 2022). The South African government acknowledges the need to adapt to climate change (Elum et al., 2017) and appears to be fully active in combating climate change (Nkhonjera, 2017). All spheres of government have an essential role to play in climate change adaptation, both from developing strategies and coordinating the adaptation process (Montmasson-Clair & Zwane, 2016). It is essential to acknowledge the increased recognition of climate change at all spheres of South African government in recent years (Leck & Simon, 2018). The government has established policies, strategies and plans to mitigate and adapt to the aftermath of climate change (Chersich & Wright, 2019; Montmasson-Clair & Zwane, 2016). Numerous government departments across all three levels of government have developed climate change strategies and/or plans (Ziervogel et al., 2014).

The government published the National Climate Change Response (NCCR) White Paper in 2011, which outlines the national government's responsibilities relating to mitigation and adaptation to climate change (Ziervogel et al., 2014). The NCCR serves as a guide for what is expected from government institutions as well as outlines what is needed by all provinces and municipalities to achieve the goals it intends to attain (Montmasson-Clair & Zwane, 2016; Ziervogel et al., 2014). The NCCR provides short-to-medium and long-term guidelines for policy development and implementation (Leck & Simon, 2018). One of the objectives of the NCCR is to adequately adapt to climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity (Department of Environmental Affairs [DEA], 2011). The government released a draft of the updated version of the NCCR in 2018. The improved version of the NCCR contains new ways through which climate change concerns can be incorporated within all sectors of government (Chersich & Wright, 2019). The other essential climate change adaptation document is the South African National Strategy. It is a reference point for all adaptation to climate change activities in the country (Chersich & Wright, 2019). SANAS is the 10-year plan of government, which describes the main strategic areas, with measurable outcomes. The main purpose of SANAS is to ensure that different government institutions at different levels and the private sector integrate and reflect on climate change adaptation (Chersich & Wright, 2019).

According to Montmasson-Clair and Zwane (2016), South African provincial institutions are at different levels in terms of adapting to climate change; for example, only Western Cape, Gauteng, Eastern Cape and KwaZulu-Natal have climate change response strategies in place. Table 1 illustrates the provincial climate change response strategies in South Africa.

The Eastern Cape Provincial government developed the Eastern Cape Climate Change Response Strategy (ECCRS) in 2011 (Department of Economic Development and Environmental Affairs [DEDEA], 2011). The development of the strategy reflects the high aspiration of the provincial government to tackle climate change. However, Santhia et al. (2018) argued that the ECCRS goal of including multi-sectoral planning for climate change at all levels has not been achieved. The South African government acknowledges that local government plays a crucial part in climate change adaptation (DEA, 2011). The local government of South Africa consists of metropolitan, district and local municipalities. It must be noted that South African district municipalities comprise several local municipalities (Leck & Simon, 2018). It is critical for local government in the Eastern Cape Province to plan for climate change adaptation (Santhia et al., 2018). Some municipalities have developed their own climate change adaptation strategies. Furthermore, South Africa is making progress in understanding the impact of climate change and beginning to implement and evaluate the adaptation responses (Ziervogel et al., 2014). The recent progress highlights the willingness of municipal institutions to combat climate change (Leck & Simon, 2018). Figure 1 illustrates the institutional framework for climate change in South Africa.

2.2 | A synthesis of barriers to climate change adaptation at the local government level in South Africa

Like other developing countries, South Africa is confronted by many social, economic and environment issues, besides the threat of climate change (Pasquini & Shearing, 2014). At local level, South African municipalities are responsible for local policies, development decisions and resource allocations to drive the country's transformation mandate, which ultimately influence local climate change adaptation prospects and barriers (Leck & Simon, 2018). Unfortunately, these institutions are struggling to achieve their developmental mandate due to various reasons, ranging from political issues to capacity constraints (Pasquini & Shearing, 2014; Pasquini et al., 2013). Therefore, the impacts of climate change land on an already complex social setting with limited resources (Brockhaus

TABLE 1 Provincial climate change response plans/strategies in South Africa.

Provinces with climate change response plan	Provinces with no climate change response plan	Budget allocated	Dedicated institutional arrangements
✓ Western Cape climate change response framework for agricultural sector	✓ Free State	✓ Western Cape (minimal dedicated budget)	✓ Western Cape
✓ Gauteng climate change response strategy	✓ North West	✓ KwaZulu-Natal (minimal dedicated budget)	✓ KwaZulu-Natal
✓ Eastern Cape climate change response strategy	✓ Mpumalanga		
✓ KZN climate adaptation plan	✓ Northern Cape		
✓ Limpopo Green Economy Plan			

Source: Montmasson-Clair and Zwane (2016).

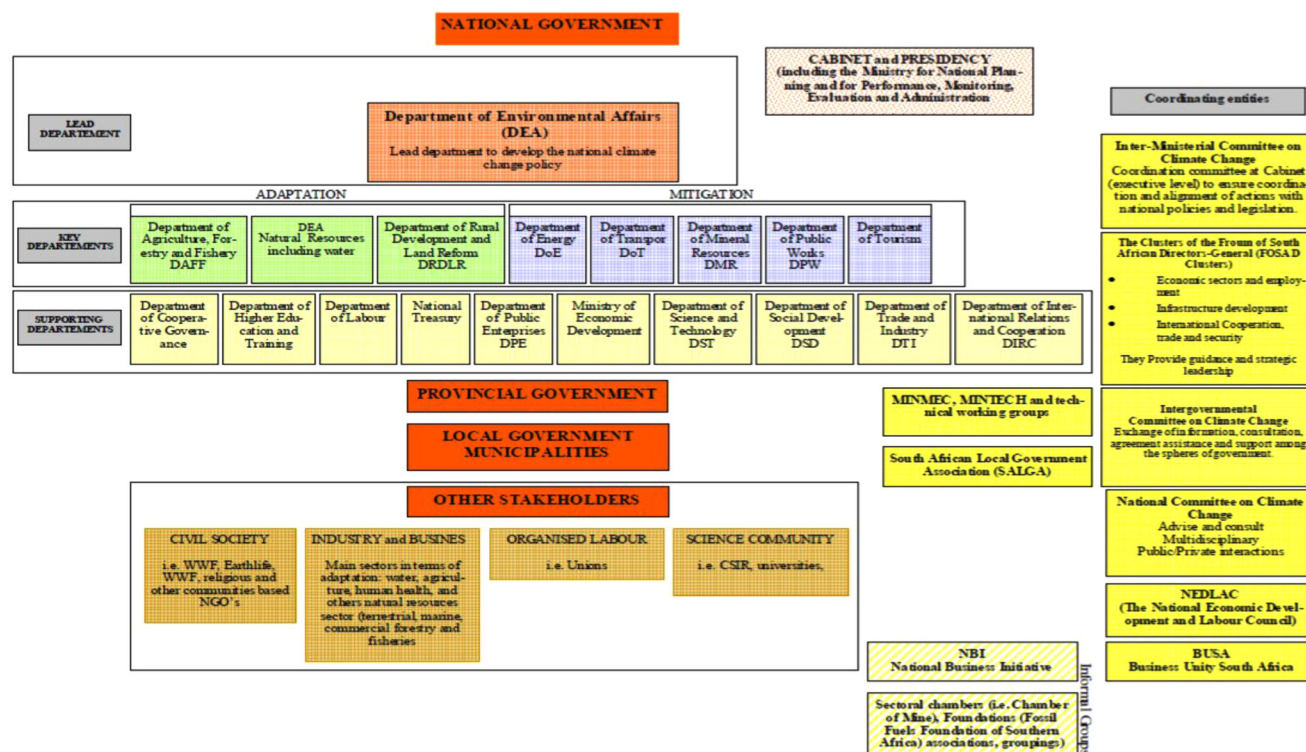


FIGURE 1 Institutional framework for climate change in South Africa. Source: DEDEA (2011).

et al., 2012; Ndebele-Murisa, et al., 2020; Regmi & Bhandari, 2013; Thomas et al., 2019). Hence, some researchers allude that climate change generates new dynamics of governance in an already existing institutional setting in South Africa (Millington & Scheba, 2021).

There are climate change adaptation concerns in South Africa, and they are complex and multi-layered (Leck & Simon, 2018). Some researchers argue that most government authorities, at a local level, are struggling to successfully adapt to climate change (Montmasson-Clair & Zwane, 2016; Ziervogel et al., 2014). Koch et al. (2007) is of the view that weak institutional network is one of the challenges for climate change adaptation in South Africa. Similarly, Ziervogel et al. (2014) cited the silo approach of government institutions as an issue in climate change adaptation. Thus, some researchers argue that most South African climate change policies and strategies are disjointed and sector specific (Montmasson-Clair & Zwane, 2016; Santhia et al., 2018). For example, in a study conducted by Leck and Siomon (2018), it was revealed that the local government implemented many climate change programs without the adequate support from provincial and national leadership. Additionally, some researchers argue that it is concerning that climate change adaptation governance is not only fragmented between institutions but also isolated in the municipalities of South Africa (Santhia et al., 2018; Ziervogel et al., 2014). Santhia et al. (2018) argued that climate change adaptation is isolated within

the municipal environmental departments, although it is a cross-sector challenge. It is a concern that climate change, a cross-cutting sector issue, is situated at the department that lacks authority to adequately address climate change (Ziervogel et al., 2014). Thus, some researchers argue that the institutional relationships, articulation and access are some of the most important factors that determine the success of climate change adaptation (Agrawal & Perrin, 2008; Leck & Simon, 2018).

Ziervogel et al. (2014) pointed out that the insufficiency of human capacity is an issue in the smaller municipalities, and the classification of climate change as an unfunded mandate at the local government level is other concerns for climate change adaptation. Similarly, some researchers argue that the lack of financial and human capacity is a challenge for climate change adaptation at the local government level in South Africa (Faling et al., 2012; Koch et al., 2007; Rosendo et al., 2018). In assertion of this view, some researchers argue that these institutions struggle to successfully implement adaptation measures to climate change due to the lack of resources (Montmasson-Clair & Zwane, 2016; Pasquini et al., 2013; Pasquini et al., 2015; Swalheim & Dodman, 2008) and deficiency of skills and expertise to adequately respond to climate change (Faling et al., 2012; Rosendo et al., 2018).

In addition, some researchers are certain that there is a need to address the lack of knowledge and information about climate change adaptation (the impacts of climate

change and adequate adaptation measures) at a local institutional level in South Africa (Pasquini et al., 2015; Rosendo et al., 2018; Popoola et al., 2020). Rosendo et al. (2018) argued that one of the repercussions of insufficient knowledge and information is poor awareness and understanding of climate change issues, especially by politicians, within the municipalities. Hence, some researchers are of the view that there are climate change strategies in place in South Africa, but there is a lack of political will to action them (Leck & Simon, 2018). In affirmation of this view, Falting et al. (2012) argued that there is inconsideration for climate change in political and administrative decision-making. Moreover, some researchers point out that climate change is currently low priority in planning and budget allocation (Rosendo et al., 2018), and it is not one of the main factors used to assess the overall annual performance of local government institutions in South Africa (Pasquini et al., 2013). Nonetheless, as the leaders of municipalities, politicians have the power to mandate municipal internal division to prioritize climate change (Pasquini et al., 2015). Unfortunately, climate change is yet to receive the necessary political prominence (Leck & Simon, 2018).

3 | METHODOLOGICAL CONSIDERATIONS

The Eastern Cape Province is one of the nine provinces of South Africa, and it is situated in the southern coastal area of South Africa (Walz et al., 2020). This province consists of 2 metropolitan municipalities and 6 district municipalities, which are further subdivided into 37 local municipalities (Santhia et al., 2018).

The Eastern Cape is arguably the poorest province in South Africa (Santhia et al., 2018), has a high ratio of households that are dependent on agriculture (Walz et al., 2020) and has high levels of poverty and illiteracy (Popoola et al., 2020). This region has been exposed to devastating droughts in recent years. Additionally, this province has under-resourced municipalities with very limited skills and capacity to adapt to climate change (DEA, 2011). Thus, it is regarded as one of the most vulnerable regions to climate change impacts in South Africa (Mugambiwa & Tirivangasi, 2017; Santhia et al., 2018).

The data for the study were collected between 2021 and 2022 in the Eastern Cape Province (see Figure 2). Specific institutions in some selected local municipalities in the province were deemed relevant in climate change adaptation at local government in South Africa. A total of 20 ($n = 20$) participants from 13 different institutions were interviewed for this study. Based on the research questions, the researchers applied judgemental criteria to engage in online interviews with the 20 respon-

dents from both government and private organization. The breakdowns of the sampling interviewees include the Department of Forestry, Fisheries and the Environment ($n = 2$), South African Local Government Association (SALGA) ($n = 1$) and from different municipalities of the Eastern Cape Province (Nelson Mandela Metropolitan ($n = 1$), Buffalo City Metropolitan ($n = 1$), Amathole District ($n = 1$), Chris Hani District ($n = 2$), Mbizana Local ($n = 2$), Elundini Local ($n = 2$), Intsika Yethu Local ($n = 1$), Port St Johns ($n = 1$), Matatiele Local ($n = 2$), Mzimvubu ($n = 2$) and Kouga Local Municipality ($n = 2$)). All the engagements were carried out virtually due to COVID-19 human restrictions at the time of data collection. The research team adopted a flexible approach of semi-structured, in-depth and open-ended discussions to uncover capacity and institutional weaknesses to climate change adaptation in the province, climate change adaptation policies and alternative strategies of enhancing adaptation and coping mechanisms. The primary data were complimented by the secondary data in the form of government gazettes, reports and archives. The secondary information was useful in identifying the existing policy frameworks for climate change adaptation and the challenges to climate change adaptation at local government level.

The primary data obtained were digitally recorded and transcribed from audio to text. Thematic analysis was used to analyse the qualitative data obtained. Kiger and Varpio (2020) defined thematic analysis as a method for qualitative data that entails searching across a data set to identify, analyse and report repeated patterns using inductive approach. The thematic analysis for this study provided a framework that enabled the transcripts of the interviews to be organized into themes of similarities. The data obtained from the secondary sources were analysed using critical discourse analysis and comparative analysis approach these methods assisted data to be interrogated on 'what, why and how' on issues related to climate change governance at local government level.

4 | EMPIRICAL EVIDENCE

4.1 | Climate change impacts in the Eastern Cape Province

One of the objectives of this paper is to examine the impacts of climate change on different municipalities in the Eastern Cape Province. To achieve this, the Climate Change Let's Respond Toolkit (South African government toolkit to integrate climate change risk and opportunities into municipal planning [DEA, 2012]), and additional climate change-related documents from the

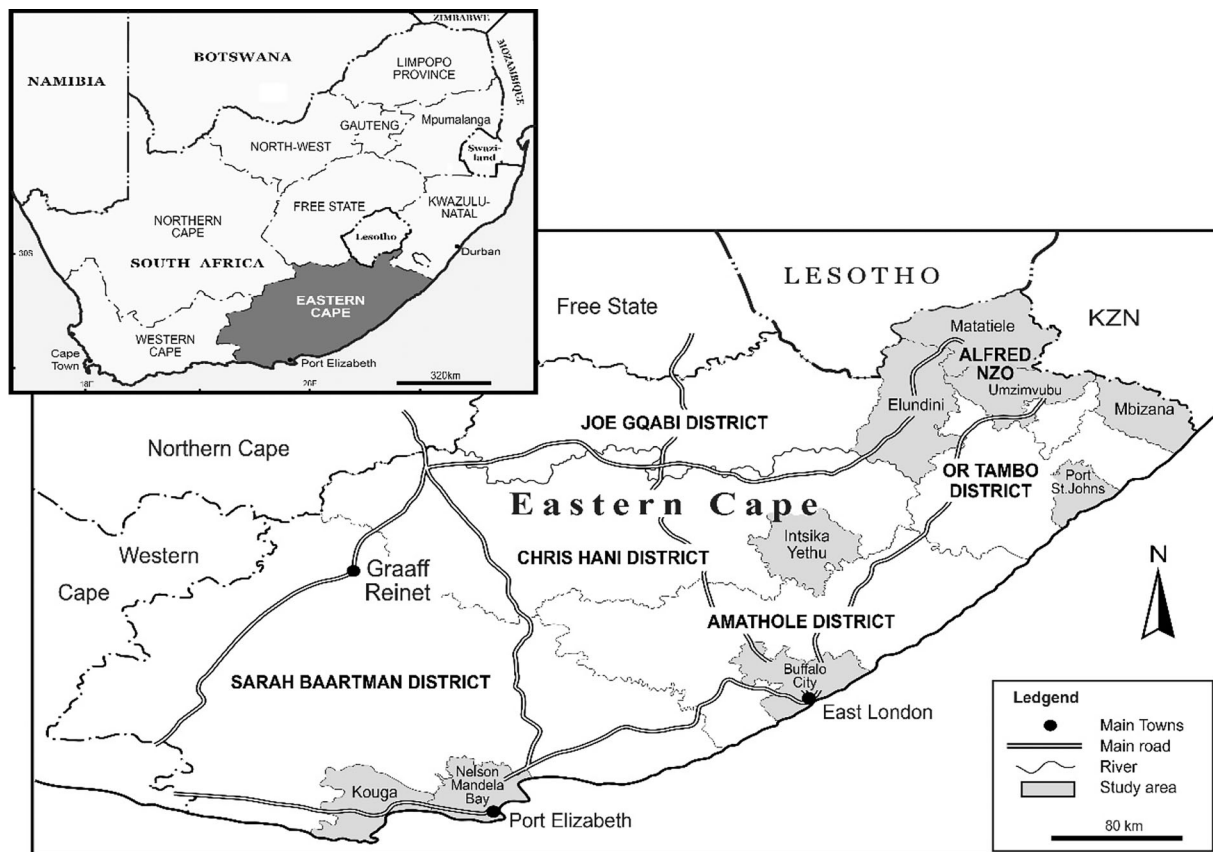


FIGURE 2 Location of the study sites in the Eastern Cape Province, South Africa. *Source:* Cartography Unit, University of the Witwatersrand (2022).

institutions of interest were reviewed. Furthermore, the respondents were questioned about the identified environmental changes associated with climate change. The results are presented in Table 2.

The information obtained shows that climate change manifests itself differently in different communities within the province. Moreover, the presented data revealed that the number and types of climate change impacts are not uniform across the municipalities.

4.2 | The strengths and weaknesses of the existing policy frameworks of climate change adaptation

This paper examined the strengths and weaknesses of the current structural policy framework of the climate change governance in South Africa and the Eastern Cape Province. Figure 3 depicts the existing structures of climate change adaptation administration in the province.

Figure 3 underscores the principles of South Africa's climate change policy framework designed to provide a cohesive and coordinated approach to addressing climate change challenges at the national and local levels while

integrating climate considerations into broader development plans and sectoral strategies. The outcomes of the field survey reflect mixed views of the current climate change adaptation governance in the province. For instance, Climatologist in the Department of Forestry, Fisheries and Environment who was engaged in an interview stated this:

The current framework emphasizes the involvement of diverse stakeholders, including government departments, civil society organizations, private sector entities, communities, and research institutions, in the planning, implementation, and review processes. The interviewee continued that the framework focuses on identifying and addressing the impacts of climate change on vulnerable communities, ecosystems, and sectors. It outlines measures to enhance adaptive capacity and resilience across various regions and sectors (Personal communication, 2021a).

However, climate change advocate in the Nelson Mandela Municipality said this in an interview:

TABLE 2 Evidence of climate change implications at local government institutions in Eastern Cape.

Impacts of climate change	Municipalities									
	Nelson Mandela Bay MM	Buffalo City MM	Amathole DM	Chris Hani DM	Mbizana LM	Elundini LM	Matatiele LM	Port St. Johns LM	Kouga LM	Mzimvubu LM
Change in temperature patterns	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Change in rainfall patterns	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Drought	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Water scarcity	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Storms surge	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sea level rise	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Floods	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Soil erosion	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sedimentation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Decreased water quality in ecosystems	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wildfires	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Heat-waves	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gale Winds	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shift in distribution of marine species	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Extreme temperatures	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Loss of agricultural land	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Loss or change of high priority biomes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Loss or change aquatic ecosystems	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Increase migration from rural to urban and peri-urban areas	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: The (✓) indicates that the impact has been identified in the municipality.

Source: Field-based notes (2021, 2022).

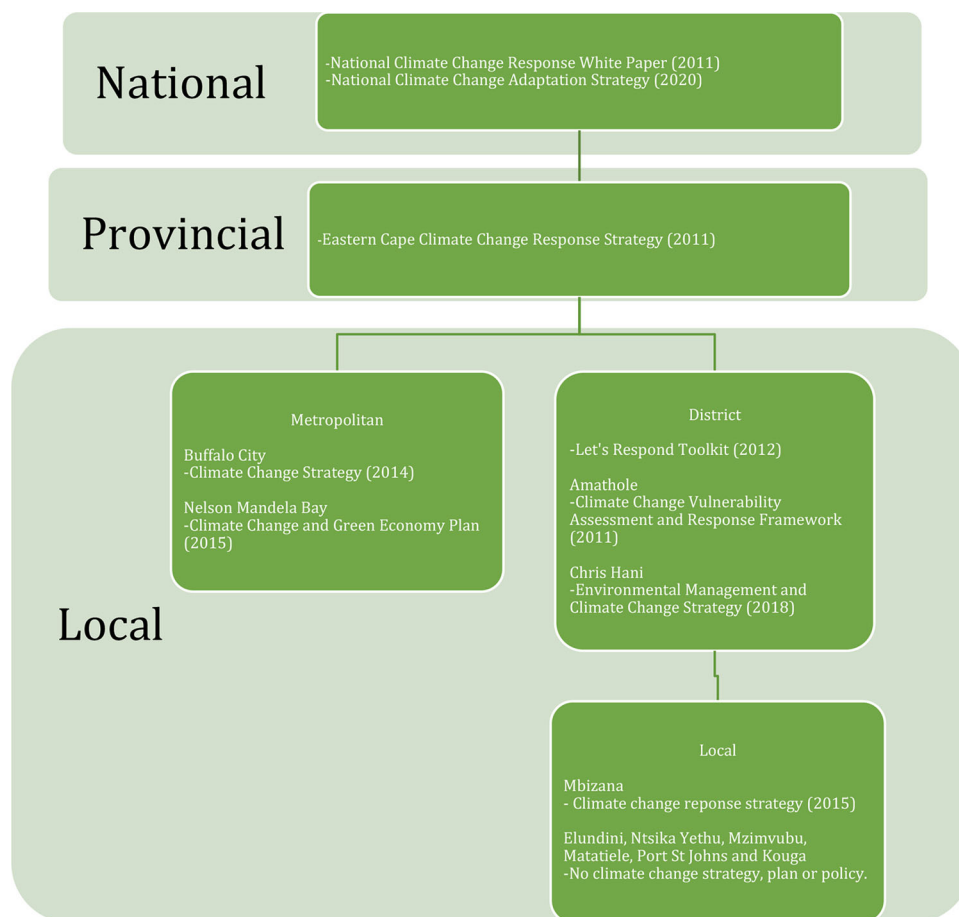


FIGURE 3 Policy framework for the municipal adaptation to climate change in the Eastern Cape Province. *Source:* Field-based notes (2021, 2022).

The current framework is too complex, contain policies and strategies with differing objectives or priorities across sectors. There are inconsistencies or conflicts between policies which often hinders effective decision-making, leading to delays or contradictions in implementation efforts (Personal communication, 2021b).

Considering the mixed perceptions of participants on the climate change adaptation framework, this paper propped into municipalities with the framework as a guide to climate change governance in the province. Table 3 reflects the answers of respondents

Table 3 illustrates that some local government institutions have the policy frameworks in place for climate change adaptation. It further demonstrates that most local municipalities do not have policy frameworks for climate change adaptation. Most of the policy documents were developed in response to the requirement of the national climate change policy, which states that all government institutions must have their own policy. The adaptation

actions, timeframes and, in some cases, projected budgets are stated in the documents; however, it is not clear how the adaptation actions will be financed.

4.3 | Adapting to climate change within the institutional and policy framework

This paper further examines the extent to which the policy framework drives the local government institutions to climate change adaptation in the Eastern Cape Province. Respondents were asked about development and implementation aspects of the policy framework that drives the climate change adaptation at local level. The perspectives of the respondents engaged during interviews are as follows:

A research participant from SALGA stated that:

There has been progress in Metros and Districts municipalities, but not in so many local municipalities. There has not been a great deal of formalisation of climate change responses

TABLE 3 Municipal policy frameworks for climate change adaptation in the Eastern Cape Province.

Municipalities	Climate change adaptation policy/plan/strategy	Name of the climate change adaptation policy/plan/strategy
Nelson Mandela Bay Metropolitan Municipality	✓	Climate Change and Green Economy Plan (2015)
Buffalo City Metropolitan Municipality	✓	Climate Change Strategy (2014)
Amathole District Municipality	✓	Climate Change Vulnerability Assessment and Response Framework (2011)
Chris Hani District Municipality	✓	Environmental Management and Climate Change Strategy (2018)
Elundini Local Municipality	✓	Climate Change Response Strategy (2015)
Mbizana Local Municipality		
Matatiele Local Municipality		
Port St. Johns Local Municipality		
Kouga Local Municipality		
Intsika Yethu Local Municipality		
Mzimvubu Local Municipality		

Source: Field-based notes (2021, 2022).

in the local government municipalities. (Personal communication, 2021c).

While a research participant from Amathole District Municipality alluded that

The local municipalities of this district do not have their own climate change responses, they are highly under capacitated (Personal communication, 2021d).

Development of the climate change adaptation policies, strategies and plans was another process of interest. The empirical evidence seems to suggest that the task of developing climate change adaptation policies is usually outsourced. The following statement is a comment from Amathole District Municipality informant:

Policy development is very complex; hence most municipalities outsource this service. We just guide the public participation, stakeholder mobilisation and inclusivity of stakeholders (Personal communication, 2021e).

This view is like to a statement made by a research participant from the Nelson Mandela Bay Metropolitan Municipality who stated that

Funding was obtained from the Electricity & Energy Directorate and a service provider was appointed. I was asked to assist in the coordination of the action plan and provided guidance to the consultants on how best to gain collaboration from individual service delivery departments within the municipality (Personal communication, 2021f).

The study on which this paper is based on was interested in understanding the adaptive capacity to climate change of municipalities of Eastern Cape Province. In view of this, discussions with the research participants revealed that the institutional adaptive capacity was not considered during the development of these policies. To validate this assertion, a research participant from Amathole District Municipality alleged that

We developed the climate change policy in a generic manner; therefore, we did not consider our adaptive capacity. Ideally, we were supposed to consider our adaptive capacity but, that is not a simple task, considering the limited capacity we have (Personal communication, 2021g).

The view was supported by a research participant from the Nelson Mandela Bay Metropolitan Municipality who alluded that

The capacity (future or existing) was not necessarily outlined within the action plan. The plan was meant to be a guide for Directorates or project managers to use, specifically because there are interventions per asset area which would reduce the risks from climate impacts and potentially support the green economy (Personal communication, 2021h).

Furthermore, it was important for the study on which this paper is based to examine the implementation of the existing policies, strategies and plans at local level. Therefore, the research participants were asked to comment on how the existing climate change adaptation policies, strategies and plans are implemented. In answering this question, a research participant from Mbizana Local Municipality indicated that

Although the municipality has its own climate change response policy, it is under capacitated, human and financial, to implement (Personal communication, 2021i).

This view correlates with an opinion of a research informant from the Amathole District Municipality who alleged that

Implementation of developed policies are hindered by fiscal constraints, and therefore, we are working backwards (Personal communication, 2021j).

In addition, the research participants from Chris Hani Metropolitan Municipality alluded that

We only have for personal, dealing with 6 local municipalities with different climate change impacts, therefore, we lack human capacity, and the financial capacity is also lacking (Personal communication, 2022a).

The data presented above indicate that the current institutional and policy framework limits the adaptation to climate change of municipalities. Therefore, it can be argued that this finding suggests that the current institutional setting at municipal level is not conducive for climate change adaptation.

4.4 | Institutional and capacity challenges of climate change adaptation

This paper propped into institutional and capacity challenges to climate change adaptation in the Eastern Cape Province of South Africa. Participants were asked to mention constraints and barriers to climate change adaptation in their municipalities. Table 4 and Figure 3 illustrate the participant's responses.

Table 4 and Graph 1 demonstrate the primary challenges to climate change adaptation and the frequency in which these challenges were mentioned by the respondents. The findings illustrate that some challenges to climate change adaptation are more common than others in the Eastern Cape Province.

5 | ANALYSIS AND DISCUSSION

The discussion of this paper was structured and sequenced to establish a holistic understanding of climate change adaptation governance in the Eastern Cape of South Africa and Africa under three main objectives which include climate governance structure in the Eastern Cape, policy framework of climate change adaptation and strategies of enhancing climate administration in the province. The underlying findings of Table 2 suggest that the impacts of climate change do not only vary from one municipality to the next, but the impacts also differ drastically within the same municipality, especially in the district municipalities; in this case, Amathole and Chris Hani District Municipalities are worst affected by climate change in the province. These findings are validated by Santhia et al. (2018) that high climate variability results in climate change adaptation challenges in the Eastern Cape Province. Our findings unearthed that the wide range of climate change impacts in district municipalities is expected due to the vast areas covered by these institutions. A district municipality consists of several local municipalities, which often contribute to complications when adapting to climate change impacts due to the vast size of the area it covers. However, this paper finding established that some of the municipalities within a district do experience the similar climate change impact, for instance, drought, but may require different techniques to adapt. The findings in Table 2 uncovered that one area may have the natural resource (water) but needs the drilling of a borehole to access the water, whereas the other area within the same district may not have the natural resource at all, and the solution may be the transportation of water to the area. The underlying in Table 2 indicates that the municipalities situated at the coastal area,

TABLE 4 Primary challenges for climate change adaptation at local government level¹.

Primary challenges	Number of times the challenge is selected by the participants (20)	Percentage (%)	Frequency rate
No legislation for climate change	16	80	High
Lack of political will/support	17	85	High
Insignificant contribution towards the overall performance	13	65	Medium
Unfunded mandate	14	70	High
Lack of financial resources	19	95	High
Lack of human capacity	17	85	High
Lack of knowledge and information	14	70	High
Absence of climate change champion	11	55	Medium
Positioning of climate change within the local government institutions.	5	25	Low

¹The frequency rate is categorized into three, where 'Low' is percentage less than 33.3%, 'Medium' is 33.3%–66.6% and 'High' is more than 66.6%.
Source: Field-based notes (2021, 2022).

for example, in this study, Buffalo City and Nelson Mandela Metropolitan Municipalities, have the high number of climate change impacts compared to the inland municipalities. This outcome correlates with the views of some researchers that South African coastal areas are highly vulnerable to the impacts of climate change (Gbetibouo et al., 2010).

In terms of the strengths and weaknesses of the existing policy framework to climate change adaptation at local government institutions in the province, as shown in Figure 3, the core findings suggest that the current climate change adaptation framework is well-defined with the key principles of multilevel governance structure designed to meet anticipated outcome. The national government developed a policy framework that serves as a guideline and outlines what is expected from all government institutions, including provincial and local level in terms of climate change (Montmasson-Clair & Zwane, 2016; Ziervogel et al., 2014). In the fulfilment of the requirement of the NCCR Strategy, the Eastern Cape Government developed the ECCCRS as a policy response to facilitate planning and coordination for mitigation and adaptation to climate change within the province (DEDEA, 2011). The local government institutions are required by the National Climate Change Strategy to develop their own policy frameworks and mainstream climate change. The key findings that emanated from the interviews and our analysis of this framework suggest that the national administration demonstrates that the policy framework for climate change adaptation is in place in majority of metropolitan and district institutions; however, the majority of the local municipalities are either unwilling or do not have the capacity to implement the framework due to its complexities and complicated nature of policy. Similar observations were made by Santhia et al. (2018) and Pasquini et al. (2013) that the existing climate change adaptation policies for government institutions in the Eastern Cape, including the provincial response strategy, are outdated, complex and difficult to interpret and implement. Similar causal findings of Figure 3 and observation by Adom et al. (2023) suggest that the task of developing the existing policies, plans and/or strategies was outsourced by all municipalities in this study with little or no inputs from the key stakeholders such as the government, communities and private organizations involved in climate change administration. Therefore, framework is the product of the consultants rather than local or indigenous expertise and is often difficult to implement at the local level by taking into account the local context. These findings aligned well with the views of Pasquini et al. (2015) that most local government institutions in South Africa lack the capacity to successfully implement climate change adaptation plans.

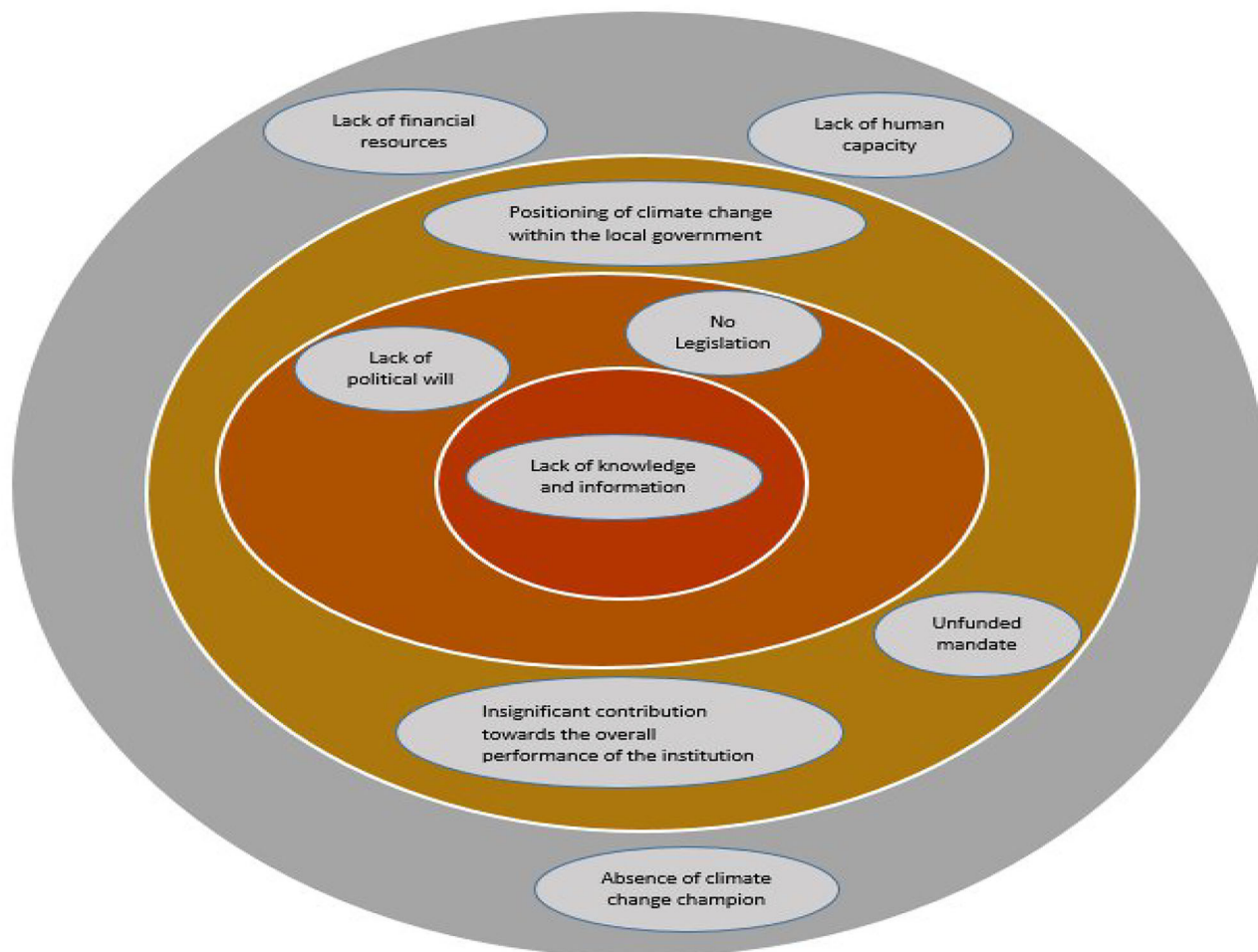
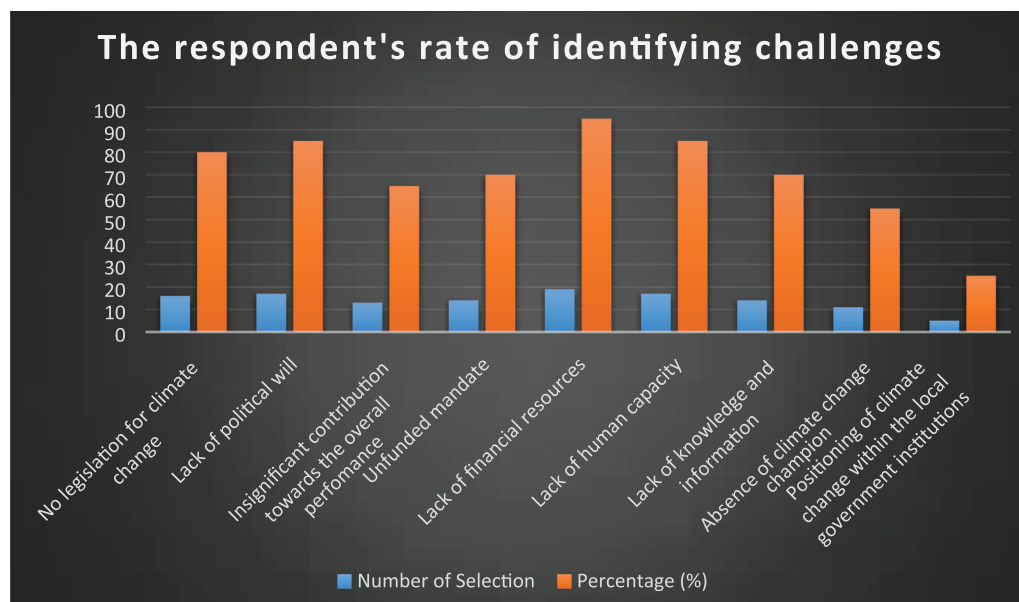


FIGURE 4 Interwoven challenges of adaptation to climate change at local government level in the Eastern Cape Province. *Source:* Research team.

In terms of institutional and capacity constraints, the outcomes of Table 4 and Figure 3 suggest that the implementation of climate change adaptation framework is hindered by several barriers and interwoven challenges at the local government level of Eastern Cape. The outcomes identified significant challenges such as limited institutional coordination, insufficient financial resources, capacity constraints, inadequate public awareness, stakeholder engagement gaps, data and information deficiencies and policy/regulatory hurdles. This outcome is summarized and portrayed in Figure 4.

The findings illustrate that the lack of knowledge and information to inform the decision-makers (politicians) results in the lack of political will and absence of legislation. Subsequently, the adaptation to climate change is positioned in the peripherals of the institution, with minimal resources. Similar findings were made by Rosendo et al. (2018) that the poor awareness and understanding of climate change challenges by politicians is the source of climate change adaptation challenges at the local government level in South Africa. The paper's findings underscore the views of Pasquini and Shearing (2014) and

Leck and Simon (2018) that lack of financial resources, human capacity, insufficient knowledge and information remained significant barriers to any meaningful climate change administration in the province. Similarly, findings of Figure 3 depict that the leadership of most municipalities in the province gives less attention to climate change issues and lack of political will, to enact or implement any legislation or policy on climate change matters. These sentiments are also shared by Adom et al. (2023) that climate change is currently low priority in planning and budget allocation of most municipalities in the province. We are of the opinion that addressing these challenges requires a multi-faceted approach involving improved institutional coordination, increased financial resources, capacity building, enhanced public awareness, better data collection and analysis, and the development of supportive policies and regulations. Collaboration among government agencies, civil society, private sector stakeholders and international partners is critical to overcome these obstacles and effectively implement climate change adaptation frameworks in the province and country.



GRAPH 1 Based on Table 4. *Source:* Field-based notes (2021, 2022).

6 | CONCLUSIONS AND RECOMMENDATIONS

Most local government institutions in the Sub-Saharan African region are struggling to adapt to climate change, and this paper proves that South African municipalities are no exception. The high variability in climate change impacts makes it difficult to adapt to current and future climate change. Moreover, there is an extreme gap between the aspirations and actions when it comes to the governance of climate change adaptation in South Africa. Although there are policies in place, the lack of an enabling environment to implement these policies creates all sorts of challenges and barriers for climate change adaptation at the local government level. This paper identified several institutional and capacity challenges for climate change adaptation at municipal level, namely, the lack of political will, absence of legislation, insignificant contribution towards the institution's overall annual performance, classification of climate change as an unfunded mandate, lack of financial resources, lack of human capacity, lack of knowledge and information, absence of climate change champion and the positioning of climate change within the local government institutions. This study recommends the introduction of institutional reforms with the sole purpose of high prioritization of climate change adaptation within the municipalities. For example, the introduction of the climate change legislation and compulsory climate change education for municipal leadership (politicians).

This study is subjected to numerous limitations. First, the study focused on local government institutions; there-

fore, mostly government officials involved in climate change adaptation at local level were engaged about the complexities of governance of climate change adaptation, not the other government institutions. Future studies could investigate the same subject in other South African government institutions, maybe at different spheres, for example, water and agricultural departments.

ACKNOWLEDGEMENTS

This research was funded by the National Research Foundation of South Africa, block grant, and GeoTerraImage-Education.

CONFLICT OF INTEREST STATEMENT

The authors declare that there are no conflicts of interest or personal relationships that could have influence the work reported in this paper.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ORCID

Siyaxola Ernest Gadu <https://orcid.org/0000-0002-2944-7346>

Richard Kwame Adom <https://orcid.org/0000-0002-5497-1377>

Mulala Danny Simatele <https://orcid.org/0000-0002-2161-1586>

REFERENCES

- Abegunde, V.O., Sibanda, M. & Obi, A. (2019) The dynamics of climate change adaptation in Sub-Saharan Africa: a review of climate-smart agriculture among small-scale farmers. *Climate*, 7(11), 132.
- Adom, R.K., Simatele, M.D. & Reid, M. (2022) Addressing the challenges of water-energy-food nexus programme in the context of sustainable development and climate change in South Africa. *Journal of Water and Climate Change*, 13(7), 2761–2779.
- Adom, R.K., Simatele, M.D., Das, D.K., Mukalazi, K.A., Sonwabo, M., Mudau, L. et al. (2023) Enhancing climate change adaptation governance through transforming institutions in Kwa-Zulu Natal Province, South Africa. *International Journal of Climate Change Strategies and Management*.
- Agrawal, A. & Perrin, N. (2008) *Climate adaptation, local institutions, and rural livelihoods*. Ann Arbor: University of Michigan.
- Agrawal, A. (2010) Local institutions and adaptation to climate change. *Social dimensions of climate change: Equity and vulnerability in a warming world*, 2, 173–178.
- Baker, I., Peterson, A., Brown, G. & McAlpine, C. (2012) Local government response to the impacts of climate change: an evaluation of local climate adaptation plans. *Landscape and Urban Planning*, 107(2), 127–136.
- Berhanu, M. & Wolde, A.O. (2019) Review on climate change impacts and its adaptation strategies on food security in Sub-Saharan Africa. *Agricultural Socio-Economics Journal*, 19(3), 145–154.
- Brockhaus, M., Djoudi, H. & Kambire, H. (2012) Multi-level governance and adaptive capacity in West Africa. *International Journal of the Commons*, 6(2), 200–232.
- Busayo, E.T. & Kalumba, A.M. (2021) Recommendations for linking climate change adaptation and disaster risk reduction in urban coastal zones: lessons from East London, South Africa. *Ocean & Coastal Management*, 203, 105454.
- Chersich, M.F. & Wright, C.Y. (2019) Climate change adaptation in South Africa: a case study on the role of the health sector. *Globalization and Health*, 15(1), 1–16.
- Dale, A., Robinson, J., King, L., Burch, S., Newell, R., Shaw, A. et al. (2020) Meeting the climate change challenge: local government climate action in British Columbia, Canada. *Climate Policy*, 20(7), 866–880.
- Department of Economic Development and Environmental Affairs (DEDEA). (2011) *Eastern Cape climate change response strategy*: Department of Economic Development and Environmental Affairs. Available online: https://www.cityenergy.org.za/uploads/resource_182.pdf
- Department of Environmental Affairs (DEA). (2011) *National climate change response white paper*: Department of Environmental Affairs.
- Department of Environmental Affairs. (2012) *Climate change let's respond toolkit*: Department of Environmental Affairs.
- Di Gregorio, M., Fatorelli, L., Paavola, J., Locatelli, B., Pramova, E., Nurrochmat, D.R. et al. (2019) Multi-level governance and power in climate change policy networks. *Global Environmental Change*, 54, 64–77.
- Dodman, D. & Mitlin, D. (2013) Challenges for community-based adaptation: discovering the potential for transformation. *Journal of International Development*, 25(5), 640–659.
- Dube, T. & Phiri, K. (2013) Rural livelihoods under stress: the impact of climate change on livelihoods in South Western Zimbabwe. *American International Journal of Contemporary Research*, 3(5), 11–25.
- Elum, Z.A., Modise, D.M. & Marr, A. (2017) Farmer's perception of climate change and responsive strategies in three selected provinces of South Africa. *Climate Risk Management*, 16, 246–257.
- Faling, W., Tempelhoff, J.W. & Van Niekerk, D. (2012) Rhetoric or action: are South African municipalities planning for climate change? *Development Southern Africa*, 29(2), 241–257.
- Gbetibouo, G.A. & Ringler, C. (2009) *Mapping South African farming sector vulnerability to climate change and variability: a subnational assessment*. Washington, DC: International Food Policy Research Institute (IFPRI) and Center for Environmental Economics and Policy in Africa (CEEPA).
- Gbetibouo, G.A., Ringler, C. & Hassan, R. (2010) Vulnerability of the South African farming sector to climate change and variability: an indicator approach. *Natural Resources Forum*, 34(3), 175–187.
- Grecksch, K. (2015) Adaptive capacity and water governance in the Keiskamma River catchment, Eastern Cape province, South Africa. *Water SA*, 41(3), 359–368.
- Huitema, D., Adger, W.N., Berkhout, F., Massey, E., Mazmanian, D., Munaretto, S. et al. (2016) The governance of adaptation: choices, reasons, and effects. Introduction to the special feature. *Ecology and Society*, 21(3), 37.
- Islam, M.T. & Nursey-Bray, M. (2017) Adaptation to climate change in agriculture in Bangladesh: the role of formal institutions. *Journal of Environmental Management*, 200, 347–358.
- Kamara, J.K., Akombi, B.J., Agho, K. & Renzaho, A.M. (2018) Resilience to climate-induced disasters and its overall relationship to well-being in Southern Africa: a mixed-methods systematic review. *International Journal of Environmental Research and Public Health*, 15(11), 2375.
- Kashaigili, J.J., Rajabu, K. & Masolwa, P. (2009) Freshwater management and climate change adaptation: experiences from the Great Ruaha River catchment in Tanzania. *Climate and Development*, 1(3), 220–228.
- Kiger, M.E. & Varpio, L. (2020) Thematic analysis of qualitative data: AMEE guide no. 131. *Medical Teacher*, 42(8), 846–854.
- Koch, I.C., Vogel, C. & Patel, Z. (2007) Institutional dynamics and climate change adaptation in South Africa. *Mitigation and Adaptation Strategies for Global Change*, 12(8), 1323–1339.
- Kom, Z., Nethengwe, N.S., Mpandeli, N.S. & Chikoore, H. (2020) Determinants of small-scale farmers' choice and adaptive strategies in response to climatic shocks in Vhembe District, South Africa. *GeoJournal*, 87(2), 677–700.
- Landauer, M., Juhola, S. & Klein, J. (2019) The role of scale in integrating climate change adaptation and mitigation in cities. *Journal of Environmental Planning and Management*, 62(5), 741–765.
- Leal Filho, W., Balogun, A.L., Ayal, D.Y., Bethurem, E.M., Murambadoro, M., Mambo, J. et al. (2018) Strengthening climate change adaptation capacity in Africa-case studies from six major African cities and policy implications. *Environmental Science & Policy*, 86, 29–37.
- Leck, H. & Simon, D. (2018) Local authority responses to climate change in South Africa: the challenges of transboundary governance. *Sustainability*, 10(7), 2542.
- Mees, H. (2017) Local governments in the driving seat? A comparative analysis of public and private responsibilities for adaptation to climate change in European and North-American cities. *Journal of Environmental Policy & Planning*, 19(4), 374–390.

- Mees, H.L., Uittenbroek, C.J., Hegger, D.L. & Driessen, P.P. (2019) From citizen participation to government participation: an exploration of the roles of local governments in community initiatives for climate change adaptation in the Netherlands. *Environmental Policy and Governance*, 29(3), 198–208.
- Millington, N. & Scheba, S. (2021) Day zero and the infrastructures of climate change: water governance, inequality, and infrastructural politics in Cape Town's water crisis. *International Journal of Urban and Regional Research*, 45(1), 116–132.
- Montmasson-Clair, G. & Zwane, M. (2016) Climate change adaptation and agriculture in South Africa: A policy assessment. [Report compiled for WWF-SA]. Cape Town, South Africa: WWF-SA.
- Mugambiwa, S.S. & Tirivangasi, H.M. (2017) Climate change: a threat towards achieving 'sustainable development goal number two' (end hunger, achieve food security and improved nutrition and promote sustainable agriculture) in South Africa. *Jamba: Journal of Disaster Risk Studies*, 9(1), 1–6.
- Musemwa, L., Zhou, L., Ndhleve, S. & Aghdasi, F. (2013) Factors affecting household access to enough food in the Eastern Cape province of South Africa. *Journal of Development and Agricultural Economics*, 5(3), 84–91.
- Ndebele-Murisa, M.R., Mubaya, C.P., Pretorius, L., Mamombe, R., Ipinge, K., Nchito, W. et al. (2020) City to city learning and knowledge exchange for climate resilience in southern Africa. *PLoS ONE*, 15(1), e0227915.
- Nkhonjira, G.K. (2017) Understanding the impact of climate change on the dwindling water resources of South Africa, focusing mainly on Olifants River basin: a review. *Environmental Science & Policy*, 71, 19–29.
- Pasquini, L. & Shearing, C. (2014) Municipalities, politics, and climate change: an example of the process of institutionalizing an environmental agenda within local government. *The Journal of Environment & Development*, 23(2), 271–296.
- Pasquini, L., Cowling, R.M. & Ziervogel, G. (2013) Facing the heat: barriers to mainstreaming climate change adaptation in local government in the Western Cape province, South Africa. *Habitat International*, 40, 225–232.
- Pasquini, L., Ziervogel, G., Cowling, R.M. & Shearing, C. (2015) What enables local governments to mainstream climate change adaptation? Lessons learned from two municipal case studies in the Western Cape, South Africa. *Climate and Development*, 7(1), 60–70.
- Patterson, J.J. & Huitema, D. (2019) Institutional innovation in urban governance: the case of climate change adaptation. *Journal of Environmental Planning and Management*, 62(3), 374–398.
- Popoola, O.O., Yusuf, S.F.G. & Monde, N. (2020) Information sources and constraints to climate change adaptation amongst small-holder farmers in Amathole district municipality, Eastern Cape province, South Africa. *Sustainability*, 12(14), 5846.
- Regmi, B.R. & Bhandari, D. (2013) Climate change adaptation in Nepal: exploring ways to overcome the barriers. *Journal of Forest and Livelihood*, 11(1), 43–61.
- Rosendo, S., Celliers, L., & Mechisso, M. (2018) Doing more with the same: A reality-check on the ability of local government to implement Integrated Coastal Management for climate change adaptation. *Marine Policy*, 87, 29–39.
- Samuels, M.I., Masubelele, M.L., Cupido, C.F., Swarts, M.B.V., Foster, J., De Wet, G. et al. (2022) Climate vulnerability and risks to an indigenous community in the arid zone of South Africa. *Journal of Arid Environments*, 199, 104718.
- Santhia, D., Shackleton, S. & Pereira, T. (2018) Mainstreaming sustainable adaptation to climate change into municipal planning: an analysis from the Eastern Cape, South Africa. *Development Southern Africa*, 35(4), 589–608.
- Sibiya, N., Sithole, M., Mudau, L. & Simatele, M.D. (2022) Empowering the voiceless: securing the participation of marginalised groups in climate change governance in South Africa. *Sustainability*, 14(12), 7111.
- Siders, A.R. (2019) Adaptive capacity to climate change: a synthesis of concepts, methods, and findings in a fragmented field. *Wiley Interdisciplinary Reviews: Climate Change*, 10(3), e573.
- Sietchiping, R. (2006) Applying an index of adaptive capacity to climate change in northwestern Victoria, Australia. *Applied GIS*, 2(3), 16.1–16.28.
- Sokona, Y., Uku, J., Zablone, O., Diop, S.H., Kunamwene, I., Lesolang, P. et al. (2021) Accelerating adaptation action in Africa. [CDKN Working Paper]
- Swalheim, S. & Dodman, D. (2008) *Building resilience: how the urban poor can drive climate adaptation sustainable development opinion*. London: Institute for Environment and Development (IIED), Sustainable Development Opinion; 2008 (November). www.iied.org/pubs/pdfs/17043IIED.pdf.
- Thomas, K., Hardy, R.D., Lazrus, H., Mendez, M., Orlove, B., Rivera-Collazo, I. et al. (2019) Explaining differential vulnerability to climate change: a social science review. *Wiley Interdisciplinary Reviews: Climate Change*, 10(2), e565.
- Tomaney, J. (2014) Region and place I: institutions. *Progress in Human Geography*, 38(1), 131–140.
- Tschakert, P. & Dietrich, K.A. (2010) Anticipatory learning for climate change adaptation and resilience. *Ecology and Society*, 15(2), 11. <http://www.ecologyandsociety.org/vol15/iss2/art11/>
- Wale, E., Nkoana, M.A. & Mkuna, E. (2022) Climate change-induced livelihood adaptive strategies and perceptions of forest-dependent communities: the case of Inanda, KwaZulu-Natal, South Africa. *Trees, Forests and People*, 8, 100250.
- Walz, Y., Min, A., Dall, K., Duguru, M., de Leon, J.C.V., Graw, V. et al. (2020) Monitoring progress of the sendai framework using a geospatial model: the example of people affected by agricultural droughts in Eastern Cape, South Africa. *Progress in Disaster Science*, 5, 100062.
- Xie, J. & Saltzman, S. (2000) Environmental policy analysis: an environmental computable general-equilibrium approach for developing countries. *Journal of Policy Modeling*, 22(4), 453–489.
- Ziervogel, G., New, M., Archer van Garderen, E., Midgley, G., Taylor, A., Hamann, R. et al. (2014) Climate change impacts and adaptation in South Africa. *Wiley Interdisciplinary Reviews: Climate Change*, 5(5), 605–620.

How to cite this article: Gadu, S.E., Adom, R.K. & Simatele, M.D. (2024) Mind the gap: The fissure between aspirations and actions in climate change governance at a local government level: A study of the Eastern Cape Province of South Africa. *Climate Resilience and Sustainability*, 3, e72. <https://doi.org/10.1002/cli.2.72>