AN EVALUATION STUDY OF THE CLIMATE CHANGE ADAPTATION PLANS FOR A PROVINCIAL CONSERVATION AUTHORITY IN SOUTH AFRICA

A thesis submitted in (partial) fulfilment of the requirements for the degree of

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by

Eleanor Charmell van den Berg-McGregor

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ABSTRACT

While there are natural changes in climate over time, the climate change phenomenon of global warming that the Earth is currently experiencing is human-induced. The impact of human-induced climate change has led to unprecedented global warming and has become evident as there have been increases in the frequency and intensity of extreme weather events such as inter alia, heatwaves, droughts and floods. This climate change trajectory poses a risk to the Earth's ability to continue providing sustainable ecosystem services necessary to sustain life on Earth. Therefore, considering the risks and impacts of climate change, there is a need to strengthen the global response to the threat of climate change, and hence, there is a need for climate change adaptation (CCA). Some benefits of CCA include the reduction of risks to nature and people, biodiversity conservation, food security, livelihoods and human well-being.

Through a CCA lens within the biodiversity and conservation sector, underpinned by Resilience Theory, this research study sets out to identify and evaluate the CCA plans of a provincial conservation authority. By reviewing the current literature for CCA, the insights gained allowed for the emergence of key characteristics for good CCA in the biodiversity and conservation sector, and the evaluation of CapeNature's (a provincial conservation authority situated in the Westen Cape of South Africa) CCA plans against these key characteristics that emerged for CCA and resilience planning in protected areas and ecosystems.
Qualitative data was gathered via focus groups and individual semi-structured interviews with seven key knowledge holders of CapeNature's CCA planning processes, plans and management approaches, and through document analysis of the entity's CCA plans, whereafter it was evaluated against the key characteristics. Challenges towards CCA and opportunities that can be explored for CCA were identified as well.

This research study has revealed that CapeNature does not have a single all-encompassing CCA plan but has various CCA approaches that consider the key characteristics necessary for good CCA. However, the entity faces various challenges regarding its intention to implement these approaches over the long term. Challenges ranged from a fragmented approach to CCA to compromised capacity and capability to implement their CCA plans over time. A recurring challenge was the lack of financial resources, and this, combined with the entity's current inability to secure sustainable financing, was emphasised as the key factor to be addressed

towards facilitating the success of the entity's CCA plans. It also emerged that CCA approaches are interdependent and linked as in various instances, when one key CCA characteristic was compromised, it had a detrimental effect on other CCA approaches. The study concludes by making recommendations to enhance CapeNature's CCA and resilience planning, noting that these may be of relevance to other conservation agencies as well.

KEYWORDS: Climate Change; Adaptation; Resilience; Protected Areas; Ecosystem-Based Adaptation

DECLARATION

I declare that the Dissertation/Thesis entitled, AN EVALUATION STUDY OF THE CLIMATE CHANGE ADAPTATION PLANS FOR A PROVINCIAL CONSERVATION AUTHORITY IN SOUTH AFRICA, which I hereby submit for the degree, MASTER OF BUSINESS ADMINISTRATION at Rhodes University, is my own work. I also declare that this thesis/dissertation has not previously been submitted by me for a degree at this or any other tertiary institution and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

Eleanor van den Berg-McGregor Date: 19 September 2024

Name Surname (*signed*)

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Table of Contents

LIST OF FIGURES

LIST OF TABLES

LIST OF ANNEXURES

LIST OF ACRONYMS

ACT -	Australian Capital Territory Government
CBD -	Convention on Biological Diversity
CCA -	Climate change adaptation
CCES -	Center for Climate and Energy Solutions
CNAPP -	CapeNature Annual Performance Plan 2023-24
CNSP -	CapeNature 5-year Strategic Plan 2020-2025
DEA -	Department of Environmental Affairs
DEA&DP -	Department of Environmental Affairs and Development Planning
EBA -	Ecosystem-based adaptation
FG -	Focus Group
IBC -	An Investment Business Case of the Income Generation Potential of Protected Areas in the Western Cape
IPCC -	Intergovernmental Panel on Climate Change
IUCN -	International Union for the Convention of Nature
NGO -	Non-governmental organisation
PA -	Protected Area
RSPB -	Royal Society for the Protection of Birds
SANBI -	South African National Biodiversity Institute
SANParks -	South African National Parks
SSI -	Semi-structured interviews
UNEP -	United Nations Environment Programme
UNFCCC -	United Nations Framework Convention on Climate Change
WC -	Western Cape
WCBSP -	Western Cape Biodiversity Spatial Plan
WCCCRSIP-	Western Cape Climate Change Response Strategy Implementation Plan
WCBSAP -	Western Cape Draft Provincial Biodiversity Strategy and Action Plan
WCPAES -	Western Cape Protected Areas Expansion Strategy
WCSOB -	Western Cape State of Biodiversity Report
WCSOC -	Western Cape State of Conservation Report
WCSWMP -	Western Cape Sustainable Water Management Plan
WWF -	World Wildlife Fund

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 SETTING THE CONTEXT OF THE STUDY

To sustain life on Earth, it is necessary to maintain the Earth's climate within a range that allows for biological life to prevail on Earth (Raven and Wackernagel, 2020). Miller (2005) states that temperature and precipitation are not fixed; consequently, as part of natural phenomena, the climate of the Earth changes over time, and the Earth undergoes periods of global cooling and global warming. It should, however, be noted that although there are natural changes in climate over time, climate change refers to an observable change in the climate that is a result of the direct or indirect activities of humans, which has led to and continues to result in changes in the global atmosphere (United Nations Framework Convention on Climatic Change, 1992).

According to the World Wildlife Fund (WWF) (2021), the climate change phenomenon of global warming that the Earth is currently experiencing is human-induced, and the Intergovernmental Panel on Climate Change (IPCC) has warned that climate change can have an irreversible impact on people and the environment (IPCC, 2014; IPCC, 2022a). The impact of human-induced climate change has led to unprecedented global warming and has become evident as there have been increases in the frequency and the intensity of extreme weather events such as, inter alia, heatwaves, droughts and floods (WWF, 2021; Convention on Biological Diversity (CBD), 2019). This climate change trajectory poses a risk to the Earth's ability to continue providing sustainable ecosystem services that are necessary to sustain life on Earth (IPCC, 2014). The four broad areas of ecosystem services include supporting services such as biodiversity maintenance and productivity; provisioning services such as food; regulating services such as climate regulation; and cultural services such as spiritual and aesthetic appreciation (IPCC, 2014; Natural England and the Royal Society for the Protection of Birds (RSPB), 2019). The natural environment comprises landscapes and seascapes, and all the ecological attributes that it houses, provide the necessary ecosystem services required to sustain life on Earth (Natural England and the RSPB, 2019). It is thus important to recognise that continued unabated climate change would have catastrophic consequences in terms of a decline in ecosystems and the essential services they provide (WWF, 2021); therefore, there is a need for climate change adaptation. Added to this, considering that the impact of climate change is already being experienced across the globe,

there is a need *"to strengthen the global response to the threat of climate change"*, and hence, there is a need for climate change adaptation (IPCC, 2022a, p.79; IPCC, 2022b, p.126).

The most used definition of climate change adaptation (CCA) is that of the IPCC, which defines adaptation as an ability to adjust to the impact or expected impacts of climate change in a manner that seeks to reduce or avoid the harmful impacts of climate change on people and places (IPCC, 2014). CCA include actions being undertaken to reduce vulnerabilities linked to a group of specific risks in specific areas (Nelson, Adger and Brown, 2007). Therefore, as climate change risks continue to loom, considering that all these risks cannot be mitigated and that some impacts are already being experienced, CCA is necessary, and all role players are required to employ actions to restore nature in aid of CCA (WWF, 2020; IPCC, 2022a; IPCC, 2022b).

1.2 GLOBAL CLIMATE CHANGE IMPACTS AND THE NEED FOR ADAPTATION

Human-induced climate change has caused extensive harmful impacts on nature and people (IPCC, 2022b) that, amongst others, include hotter temperatures, more severe storms, increased drought, species loss, health risks, not enough food, poverty and displacement, and warming oceans that lead to sea-level rise (World Bank, 2013*;* IPCC, 2022b).

For ecosystems, an increase in the frequency and intensity of human-induced climate change-related weather extremes have been observed in the form of extremely heavy rainfall events, heat extremes in oceans and on land, exceptional drought events and extraordinary fire events (IPCC, 2022b; CBD, 2019). Climate change has caused shifts in seasons and has led to widespread deterioration in the structure and function of ecosystems, thus undermining ecosystem services, resilience and the natural adaptive capacity of these systems (World Bank, 2013; IPCC, 2022b). Impacts on ecosystem structure, species geographic ranges and phenology (i.e. timing of seasonal changes) have become apparent at various regional and local scales (World Bank, 2013; IPCC, 2022b). These observed impacts of climate change on ecosystems are demonstrated in Figure 1.

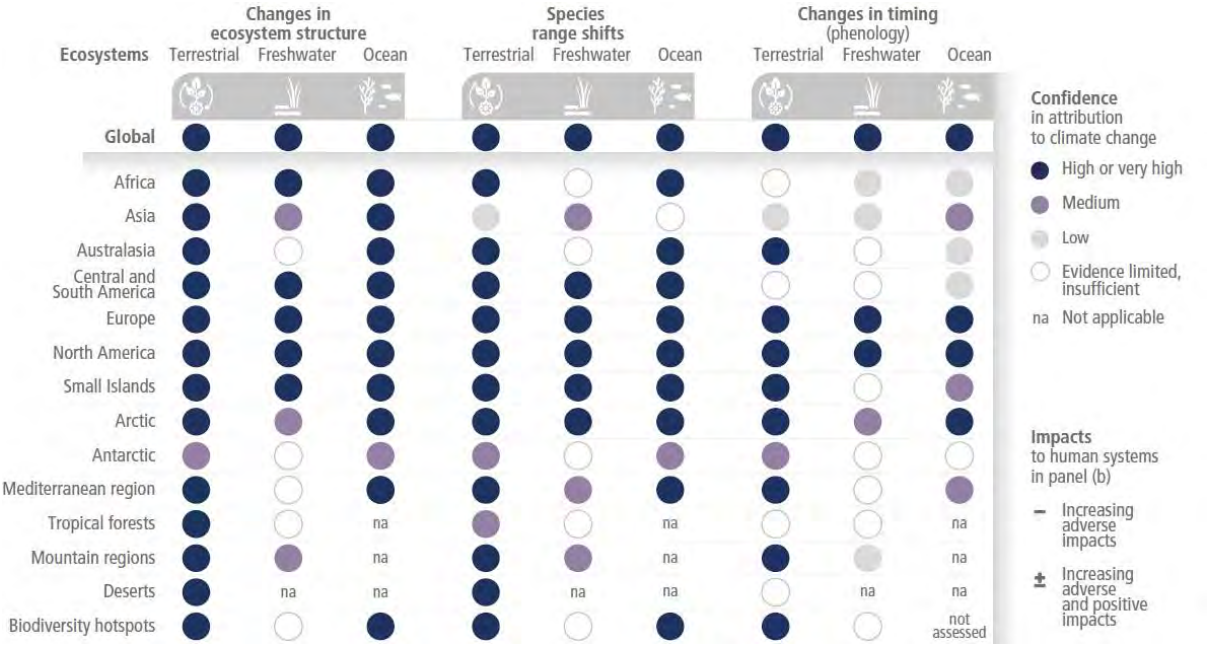

Figure 1: Observed impacts of climate change on ecosystems (Source: IPCC, 2022b, p.10).

As per Figure 1, it is apparent that climate change has had an impact on ecosystems across various regions of the globe. For example, as per Figure 1, for Africa, there is high confidence that changes in ecosystem structure and species range shifts in terrestrial and ocean systems can be attributed to climate change. Using Europe as an example, as per Figure 1, there is high confidence that changes in ecosystem structure, species range shifts and changes in the timing of seasons across terrestrial, freshwater and ocean systems are attributed to climate change.

Climate model projections predict that the western parts of Southern Africa will experience increases in heatwaves and draughts and that South Africa will experience some of the largest increases in temperature due to global warming (IPCC, 2022a). Using the Western Cape province of South Africa as an example, it is projected that this province will experience a reduction in rainfall (IPCC, 2022a) (See Figure 2). Figure 2 depicts the geographic location of the Western Cape province in relation to South Africa as a whole.

These predicted consequences of climate change pose a risk to ecosystems such as, amongst others, freshwater systems, highly biodiverse areas and dune systems in South Africa (IPCC, 2022a). For example, the Fynbos biome in the Western Cape is particularly *"vulnerable to*

the increasing impact of fires under increasing temperatures and drier winters" (IPCC, 2022a, p.260), which would have implications for ecosystems and protected areas in this province. The Department of Environmental Affairs (DEA) and South African National Biodiversity Institute (SANBI) (2016) in South Africa confirm that climate change will have detrimental impacts on biomes in various ecosystems and as such, this will have direct climate change implications on ecosystems and protected areas and hence the need for CCA.

Therefore, considering these adverse impacts of climate change on ecosystems, it is imperative that CCA planning and actions are taken to avoid further deterioration of ecosystems and the life-supporting ecosystem services they provide (WWF, 2020; IPCC, 2022a; IPCC, 2022b). This is necessary to enable an ability to adjust to the impacts of climate change to reduce or avoid the negative impacts of climate change on people and places (IPCC, 2014; Mehryar, 2022).

1.3 GENERAL BENEFITS OF CLIMATE CHANGE ADAPTATION

CCA plans that are feasible and effective can reduce risks to nature and people (IPCC, 2022b). CCA planning and implementation, underpinned by suitable planning processes, policies and decision-support tools, can have multiple benefits such as biodiversity conservation, food security, livelihoods and well-being (Dicker, Unsworth, Byrnes and Ward 2021; IPCC, 2022b). For example, the conservation, protection and restoration of terrestrial, coastal, freshwater and ocean ecosystems reduce the vulnerability of biodiversity to climate change (Jiménez Hernández, 2016; IPCC, 2022b). Linked to this, good CCA would, for example, include facilitating options for species to move to new and appropriate locations through facilitating connectivity between conserved areas (DEA and South African National Biodiversity Institute (SANBI), 2016). For water-related climate change risks, enhancing nature's natural water retention ability by restoring wetlands and rivers and implementing good land use planning that identifies no-build zones can reduce the risk of floods (IPCC, 2022b).

CCA, through the restoration and protection of ecosystems, is also critical in improving climate resilience (DEA and SANBI, 2016; IPCC, 2022b). It should be noted that at its basic level, resilience means the ability to bounce back or recover from a disturbance or a shock (Allen, 1990), and climate resilience entails the capacity to foresee, recover from, and adapt

to the disturbances and impacts of climate change (Center for Climate and Energy Solutions (CCES), 2019). Therefore, building resilience of biodiversity and supporting ecosystem integrity not only reduces climate risks and enables CCA in natural systems, but also plays a critical role in maintaining health and well-being, livelihoods, food and water security and various other benefits for people (United Nations Environment Programme (UNEP), 2022; IPCC, 2022b).

1.4 THE ROLE OF CCA IN CONSERVATION AND THE ROLE OF PROVINCIAL CONSERVATION AUTHORITIES IN SOUTH AFRICA TOWARDS CCA

Adaptation seeks to reduce or avoid the harmful impacts of climate change on people and places (IPCC, 2014). Therefore, CCA can play a significant role in nature conservation and biodiversity management as the employment of adaptation strategies can minimise climate change impacts and aid in building climate resilience (DEA and SANBI, 2017; Harvey, 2022; CBD, 2019).

In the nature conservation and biodiversity management arenas, CCA can be achieved through various means ranging from the effective management of existing protected areas and establishing new protected areas to employing ecosystem-based adaptation (EBA) that is science-based (Bertram, Barrow, Blackwood, Rizvi, Reid and von Scheliha-Dawid, 2017; CBD, 2019). To enhance its chances of success, adaptation initiatives can employ communication, capacity building, participatory approaches and governance aspects that enable relevant stakeholders to become aware of climate change risks and impacts, and to create a shared vision and ownership of CCA (DEA and SANBI, 2016; EUROPARC-Spain, 2020). The South African National Department of Environmental Affairs (DEA) adds that adaptation strategies need to be developed at provincial and local scales, and adaptation plans should be developed within the spatial area of a relevant authority (DEA, 2018). To this end, the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) developed a climate change strategy and action plan for the Western Cape (WC) in 2008 (DEA&DP, 2008). This strategy pursues the integration of adaptation measures such as *"increasing capacity, strengthening resilience and minimising risk"* to facilitate an adaptive response to the impacts of climate change (DEA&DP, 2008, p.xiii). The strategy identified vulnerable systems that were deemed as priorities, which, amongst others, included natural systems such as water, ecosystems and biodiversity, coastal and marine systems and

resources, and the associated Climate Change Action Plan identified relevant adaptation responses (DEA&DP, 2008).

Therefore, considering how CCA can be achieved in the nature conservation and biodiversity management arenas, conservation authorities such as CapeNature in the WC of South Africa, have conservation mandates to manage protected areas, ecological infrastructure and ecosystem services (CapeNature, 2022), are well positioned to employ protected area and EBA CCA approaches. This is supported by Dudley (2008), who states that protected areas (that are managed through formal legal and/or informal mechanisms) allow for the conservation of nature and the associated ecosystem services. Added to this, EBA entails the conservation, restoration and sustainable use of biodiversity and the associated ecosystem services as part of a larger overall CCA strategy to increase the resilience of people, places and ecosystems at large, thus reducing their vulnerability to the harmful impact of climate change (International Union for Conservation of Nature (IUCN), 2009).

It is evident that adaptation plays a vital role in nature's ability to respond to the risks and impacts of climate change and that nature conservation and biodiversity management initiatives should employ CCA towards long-term climate resilience. Therefore, by virtue of their mandate, conservation authorities such as CapeNature can contribute to CCA and facilitate climate change resilience from an ecological and social perspective (Janishevski and Gidda, 2010; Gross, Woodley, Welling and Watson, 2016; Natural England and RSPB, 2019).

1.5 PROBLEM STATEMENT

CapeNature, a provincial government conservation authority, operating under the auspices of the WC Department of Environmental Affairs and Development Planning (DEA&DP), is situated in the WC province of South Africa and is responsible for the province's nature conservation mandate (CapeNature, 2022) (see Figure 2 and Figure 3). Figure 2 depicts the geographic location of the WC Province in relation to South Africa as a whole, and Figure 3 shows the WC Conservation Estate, where the term 'estate' refers to the protected areas and land under conservation in the WC. As per its mandate, CapeNature, inter alia, manages provincial nature reserves and World Heritage sites (CapeNature, 2023a). This entity also implements biodiversity and environmental management legislation, undertakes research,

implements environmental education programmes and offers ecotourism (CapeNature, 2023a).

The WC Climate Change Response Strategy Implementation Plan (Brown, Chihumbiri, Jansen, Jennings-Boom, Tshindane and van Weele, 2023) expects CapeNature to contribute to the WC's climate change responses, and as such, CapeNature purports to develop and implement adaptation approaches to strengthen EBA in South Africa (CapeNature, 2020) and support climate change resilience (CapeNature, 2022). CapeNature has thus started to consider CCA approaches, but it seems to be disjointed as the entity does not have an all-encompassing document that presents its CCA plans. There is, therefore, potential to obtain and consider CapeNature's documents and approaches to ascertain if these lend themselves to being considered the entity's CCA plans and to evaluate these.

It should be noted that while the entity has started CCA actions, this research only evaluates CapeNature's plans and management approaches towards CCA for climate resilience and does not measure the degree to which they have been implemented. The research seeks to evaluate CapeNature's plans and approaches against key characteristics necessary for good CCA and resilience planning that emerged from the literature (see Chapter 2) to ascertain what the entity's current CCA plans are, and if these consider the key characteristics. It seeks to contribute to building the theory and the existing body of knowledge on key elements for good CCA plans. It also intends to suggest recommendations to CapeNature to enhance its plans, which may be of relevance to other conservation agencies as well.

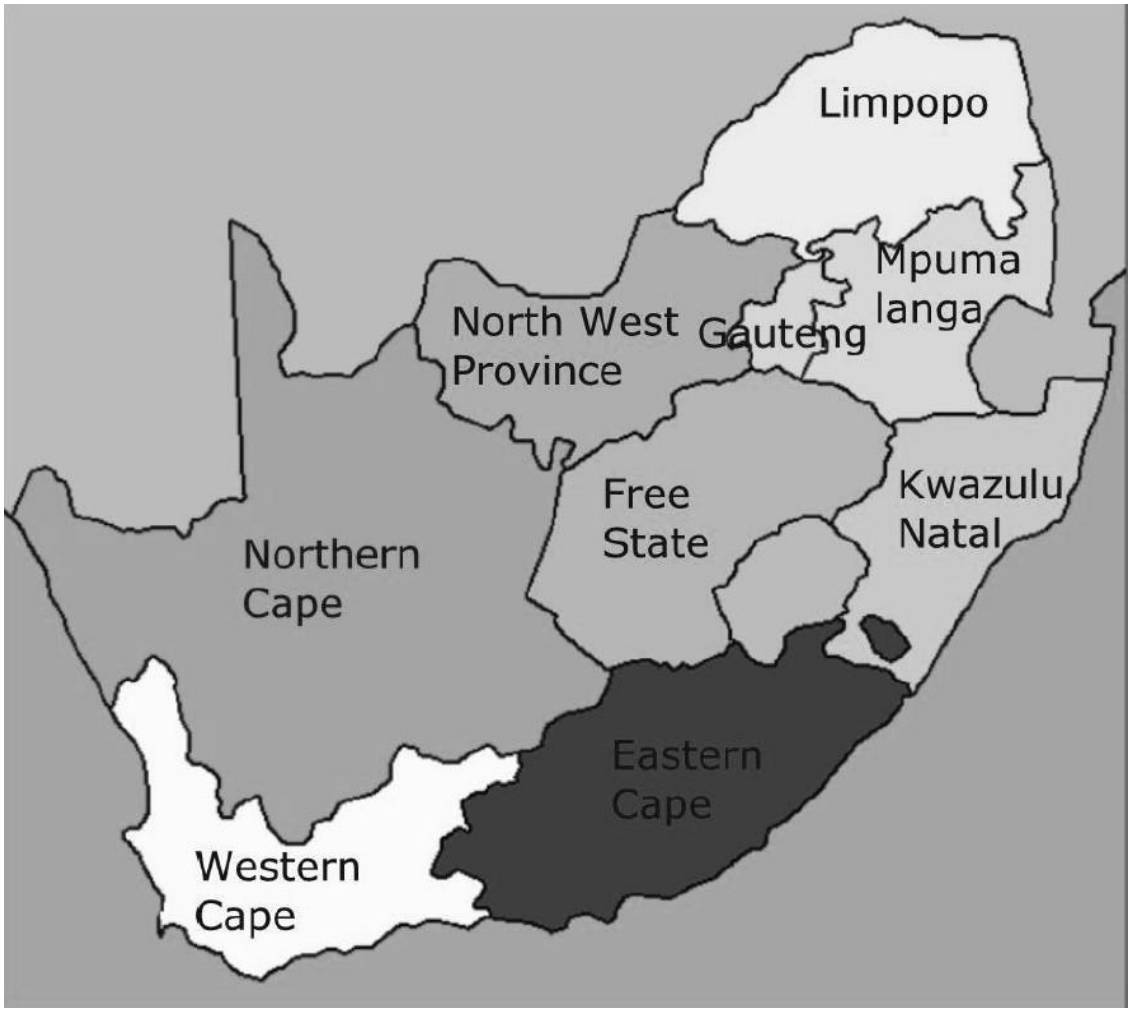

Figure 2: Map depicting the geographic location of the Western Cape Province in relation to South Africa as a whole (Source: Herbig, 2011, p.100).

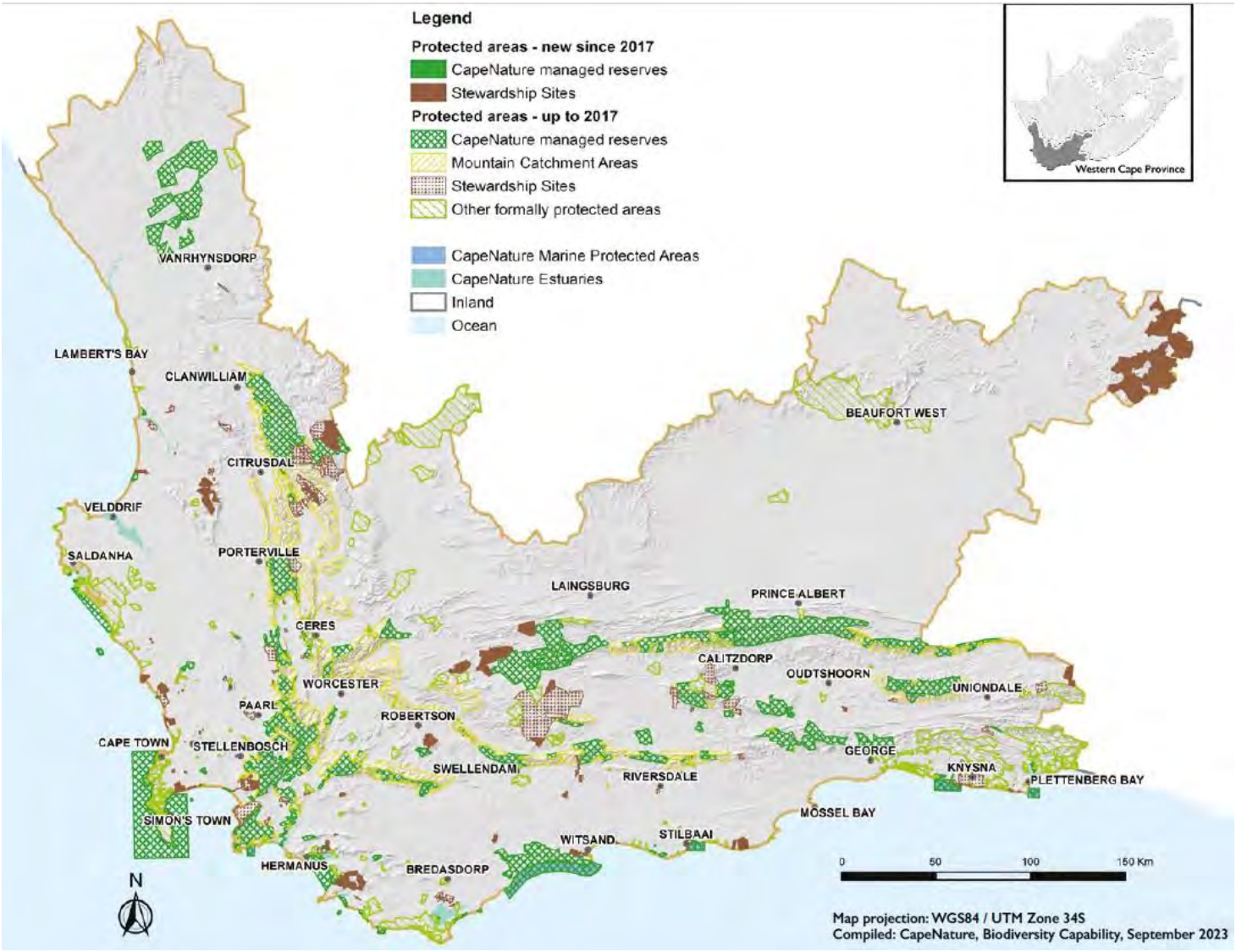

Figure 3: The Western Cape Conservation Estate (Source: CapeNature, 2023c, p.64)

1.6 RESEARCH GOAL AND OBJECTIVES

1.6.1 Goal of the study

The goal is to identify and evaluate CapeNature's CCA plans against the key characteristics that emerged from the literature for CCA and resilience planning in PAs and ecosystems.

1.6.2 Objectives of the study

The objectives of the research are to:

- clarify the concepts, identify benchmarks, and assess the constraints for CCA and resilience planning in PAs and ecosystems in the context of South Africa.
- identify the current CCA planning and management approaches of CapeNature.
- evaluate the current CapeNature CCA plans and identify the key challenges and opportunities associated with CCA planning and management towards climate resilience.
- make recommendations to CapeNature to improve their CCA and resilience planning.

1.7 CONCLUSION

Climate change poses a risk to the Earth's ability to continue providing sustainable ecosystem services (IPCC, 2014; WWF, 2021). The impact of climate change has been observed across various ecosystems and human systems across the globe, ranging from impacts that undermine human well-being to ecosystem services, resilience and the natural adaptive capacity of these systems (World Bank, 2013; IPCC, 2022b). Consequently, there is a need to strengthen the global response to the threat of climate change and, hence, the need for CCA (IPCC, 2022a; IPCC, 2022b). The research seeks to evaluate a conservation authority's [i.e. CapeNature's] CCA plans and approaches against the key characteristics necessary for good CCA and resilience planning and to suggest recommendations to CapeNature.

CHAPTER 2: LITERATURE REVIEW AND UNDERPINNING THEORY

This chapter clarifies the concepts of CCA (Section 2.1) and climate resilience (Section 2.3) by providing a definition and understanding of what they mean and how they link. It presents the key characteristics of good CCA and climate resilience that emerged from the literature (Section 2.2) and presents resilience theory as the underpinning theory for the research study (Section 2.3).

2.1 CLIMATE CHANGE ADAPTATION

Noting that CCA is dynamic and that this concept can have different meanings for different stakeholders, the IPCC generally describes CCA as an ability to adjust to the impact or expected impacts of climate change in a manner that seeks to reduce or avoid the harmful impacts of climate change on people and places (IPCC, 2014). CCA encompasses actions and processes that reduce the impact of climate change on people and places (Mehryar, 2022). To this end, the United Nations Framework Convention on Climate Change (UNFCCC) (2023) states that CCA must, at the very least, be science-based (i.e. based on risk, vulnerability and impact assessments), implementing the adaptation measures, and monitoring and evaluating adaptation (UNFCCC, 2023).

According to the UNFCCC (2023), good CCA initiatives, inter alia, also require raising awareness, engaging a wide range of stakeholders, participatory and transparent approaches and local people involvement (UNFCCC, 2023). In addition, ecosystems must be considered, adaptation must be integrated into environmental and socio-economic policies and actions, technical and institutional capacities must be strengthened, and the provision of technical and financial support is critical (UNFCCC, 2023).

2.2 KEY CHARACTERISTICS FOR CLIMATE CHANGE ADAPTATION

According to Cumming, Allen, Ban, Biggs and Biggs (2015), the concepts of CCA and climate resilience apply to ecosystems of conservation concern as well as to protected areas. Protected areas, inter alia, include Nature Reserves and Protected Environments (National Environmental Management: Protected Areas Act 57 of 2003). According to Preston, Westaway, and Yuen (2011), it is critical for CCA plans to be evaluated as they can have

significant gaps. It must, however, be recognised that various broad CCA guidance instruments emphasise different characteristics, making it difficult to decide what the key CCA characteristics are from a single instrument (Preston et al., 2011). The various perspectives for CCA planning identify a different suit of criteria that CCA plans can be evaluated against (Preston et al., 2011). Therefore, the key characteristics of good CCA planning are those representing shared or recurring practice across various guiding instruments, and they are deemed to be the basic elements that should be considered in an organisation's CCA plans (Preston et al., 2011).

The following key characteristics emerged as important considerations for CCA and informed the characteristics that CapeNature's CCA plans were evaluated against.

2.2.1 Protected areas and protected area network

The IUCN defines a protected area (PA) as a geographical space that is clearly defined, recognised, dedicated and managed through legal mechanisms or other effective means that seeks to achieve the long-term conservation of nature, including the associated ecosystem services and cultural values that the PA houses (Gross et al., 2016). Regarding broader landscapes, the IUCN defines a protected landscape or seascape as an area with a distinct character housing substantial ecological, biological, cultural and scenic value that was produced over time due to the interaction between people and nature (Gross et al., 2016). The IUCN adds that it is vital to maintain the integrity of the interaction between people and nature to protect and sustain the area and its related nature conservation and other values (Gross et al., 2016).

Various guidelines repeat similar views related to PAs and PA networks. For instance, the establishment of new PAs, facilitating a network of PAs that enables connectivity via corridors and expanding the network of PAs is advocated for by Baron, Gunderson, Allen, Fleishman, McKenzie, Meyerson, Oropeza and Stephenson (2009), Janishevski and Gidda (2010) and EUROPARC-Spain (2020). Added to this SANParks (2022), DEA and SANBI (2016), and Scott and Lemieux (2005) are also of the view that the reduction in the fragmentation of ecological systems and planning beyond the boundaries of existing PAs, i.e. integrating PAs into wider landscapes, seascapes, sectoral plans and strategies, is vital as this approach plays a key role in CCA through building resilience and minimising climate change impacts. Natural England and RSPB (2019) and EUROPARC-Spain (2020) add that PAs are

part of a wider landscape and are of extreme importance in ecosystems and, through extension, human resilience as they are embedded in and a critical pillar of ecosystem-based adaption.

2.2.2 Ecosystem-based adaptation

The IUCN (2009, p.1). defines EBA as *"the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change"*. Cohen-Shacham, Walters, Janzen and Maginnis (2016), the CBD (2019) and Hallegatte, Rentschler and Rozenberg (2020) add that EBA is an element of an overall CCA strategy that uses sustainable management, protection, conservation, restoration and general management of ecosystems to provide services that enable adaptation to the impacts of climate change to foster climate resilience.

The UNEP (2022) indicates that nature-based solutions are actions that restore, conserve, sustainably manage and protect ecosystems that can address environmental, social and economic challenges, thus contributing to biodiversity conservation, ecosystem services, human well-being and climate resilience. For this reason, UNEP (2022) and the CBD (2019) confirm that the terms 'EBA' and 'nature-based solutions' can be used interchangeably, as they are deemed to be equal.

In terms of EBA, several guidelines iterate that this approach is necessary to address climate change. For example, Monty, Murti, Miththapala and Buyck (2017), Jiménez Hernández (2016) and Bertram et al. (2017) indicate that the various aspects of EBA aim to reduce the vulnerability of ecosystems and people to the adverse effects of climate change and to maintain and increase resilience to climate change. DEA and SANBI (2017), the CBD (2019), and Harvey (2022) add that the EBA approach provides co-benefits through managing the natural environment in a manner that provides benefits to nature and the conservation thereof, as well as helps people adapt to climate change by contributing directly and indirectly to human well-being.

Therefore, Bertram et al. (2017) and St-Laurent, Oakes, Cross and Hagerman (2022) conclude that EBA should be a criterion when considering CCA as it includes various aspects that can contribute to environmental and societal adaptation and increase climate resilience.

2.2.3 Science-based CCA

Hallegatte et al. (2020) indicate that various future climates do not exist today; therefore, according to DEA and SANBI (2017), EUROPARC-Spain (2020) and Natural England and RSPB (2019), adaptation plans should be science-based.

According to various guidelines, CCA must be informed by science and Scott and Lemieux (2005), Jiménez Hernández (2016), and Bertram et al. (2017) indicate that this entails undertaking baseline studies to use as a reference for protection or restoration; conducting research to better understand the processes of how climate change affects the natural environment; undertaking risk and vulnerability assessments to identify features that would be most vulnerable or most resilient to climate change; establishing alternative scenarios on how systems can change and modelling ecosystem responses to identify strategies to address recent and anticipated changes linked to climate change. Baron et al. (2009), Janishevski and Gidda (2010), and St-Laurent et al. (2022) state that these strategies should include useful indicators that are measurable, reportable and verifiable, and the outcomes should be clear, i.e. it should be clear as to what the successful delivery of indicators would be and how success will be determined and demonstrable.

In support of a science-based approach to CCA, Gross et al. (2016), the CBD (2019), and Harvey (2022) indicate that there is a high level of uncertainty linked to climate change. Therefore, the findings of continued research and current scientific discoveries should be taken into account to enhance scenario planning and to inform adaptation plans to allow for adaptive management (Gross et al., 2016; CBD, 2019; Harvey, 2022). Gross et al. (2016), Nelson, Mathieu, Thomas, Archibald, Ta, Scarlett, Miller, MacInnis, Sheehan, Pompura, Hassanzadeh, Brook, Grant, Carr, Graham, Harms, Sales, Hartley, Cameron, Eckert, Elliot, Boyd and Tambalo (2020) and Hallegatte et al. (2020) thus conclude that ecosystems should be monitored and managed for change and not only for persistence as climate change is ongoing and continual.

2.2.4 Participatory

A participatory approach to CCA emerged as an important characteristic across various guidelines as DEA and SANBI (2016), Hallegatte et al. (2020), and SANParks (2022) highlight that climate change affects ecological systems and that people rely on the systems. Hence, it is a shared problem where efforts to prepare for and adapt to climate change require

participation, cooperation and co-creation of solutions with a variety of stakeholders, including but not limited to scientists, local communities, non-governmental organisations, government, research institutions and other sectors (DEA and SANBI, 2016; Hallegatte et al., 2020; SANParks, 2022).

The participatory approach allows for a shared vision (Baron et al., 2009). Jiménez Hernández (2016), Bertram et al. (2017), and Harvey (2022) support this by stating that a participatory approach allows for the involvement of partners with different interests, which increases the potential for cross-sectoral adaptation that benefits nature and people and it allows for a shared understanding and ownership of the plan. Therefore, participatory processes help to build ownership and community and institutional capacity that leads to improved adaptive capacity to climate change (Monty et al., 2017).

2.2.5 Good governance

Many guidelines recognise the need for good governance, and DEA and SANBI (2016) and Hallegatte et al. (2020) specify that good governance with the right stakeholders and the rule of law is required to create a conducive environment for CCA towards climate resilience. Hallegatte et al. (2020) mention that governance refers to the ability to make good decisions and to enforce decisions to enable operations. DEA and SANBI (2016) state that a governance structure should manage all relevant aspects, which, amongst others, include having relevant policies and procedures in place, risk management and transparency. Gross et al. (2016), the CBD (2019), and Harvey (2022) support the significance of this theme by indicating that the promotion of equitable and diverse governance systems, including a variety of stakeholders such as government, private sector and communities, is important. Jiménez Hernández (2016), Bertram et al. (2017), and Monty et al. (2017) mention that for EBA, a level of co-management, appropriate group representation and accountability is central to enabling long-term capacity to facilitate sustainable governance. Cohen-Shacham et al. (2016) and EUROPARC-Spain (2020) reinforce that this is necessary to develop a dynamic and adaptive governance system.

2.2.6 Communication

Numerous guidelines expressed the critical importance of communication in CCA. For example, Baron et al. (2009) state that to obtain support for a CCA plan and its ultimate implementation, it is necessary to build a culture of trust between stakeholders, especially

public servants and the public. Gross et al. (2016), Monty et al. (2017), and Bertram et al. (2017) support this by indicating that good communication and trust can be achieved through transparency, raising awareness and informing the public by using everyday language continuously about the complexity of managing ecological systems in the face of climate change, the adaptation plans, progress, setbacks and achievements.

DEA and SANBI (2016), Cohen-Shacham et al. (2016) and Hallegatte et al. (2020) state that it is imperative to create a comprehensive communication strategy to enable effective communication and information sharing. SANParks (2022), Harvey (2022), and St-Laurent et al. (2022) advocate for communicating and disseminating information between partners who are co-responsible for the CCA plan and to the broader public. Scott and Lemieux (2005), Jiménez Hernández (2016) and Natural England and RSPB (2019) indicate that it is also necessary to communicate CCA plans to all relevant partners, especially if they were not party to developing the plan, as the more partners and stakeholders get behind and support the plan the greater the likelihood of success. It is further advised that partnerships be built with the media to aid in disseminating the role of ecosystems as the providers of ecological services for the well-being of people and nature, and the value of functional ecosystems in addressing climate change (Janishevski and Gidda, 2010; DEA and SANBI, 2017; EUROPARC-Spain, 2020).

2.2.7 Policy, frameworks and mainstreaming

Mainstreaming refers to the integration of adaptation objectives, plans, measures, policies, operations and strategies into local, regional and national development processes and budgets (DEA and SANBI, 2017; CBD, 2019; St-Laurent et al., 2022). Various guidelines, such as those by the CBD (2019), EUROPARC-Spain (2020) and Harvey (2022), indicate that this approach is vital as it allows for the mainstreaming of natural solutions to climate change and enables long-term support for CCA through PAs and EBA. According to DEA and SANBI (2016) and Jiménez Hernández (2016), mainstreaming seeks to improve the efficiency, effectiveness and sustainability of CCA initiatives towards climate resilience and to reduce climate change risk. Therefore, according to Baron et al. (2009), Natural England and RSPB (2019) and SANParks (2022), CCA plans should thus not be developed in isolation and should link to relevant policy, legal mandates and frameworks; they should be aligned to higher-level planning at a regional and national strategy level, and they should contribute to achieving higher-level targets.

Gross et al. (2016, p.2) stress that *"a key outcome from COP21 was recognising the importance of ecosystem-based approaches to achieving climate adaptation, including the role of PAs as a part of national responses to climate change"*. Hallegatte et al. (2020) add that organisations involved in CCA should identify climate resilience objectives and that its corporate governance arrangements should mainstream climate change targets and indicators into dedicated committees and specialised units to address climate change risks. In addition, the indicators should be mainstreamed into performance contracts (Hallegatte et al., 2020). Nelson et al. (2020) and Hallegatte et al. (2020) add that CCA towards climate resilience should also be mainstreamed and integrated into all policies in an organisation instead of limiting it to only direct climate-related actions.

2.2.8 Capacity

Building the capacity of local people and engaging them in project design, implementation, and monitoring are important to achieving CCA (Scott and Lemieux, 2005; Monty et al., 2017; CBD, 2019). Guiding instruments by Gross et al. (2016), DEA and SANBI (2017), EUROPARC-Spain (2020) and Harvey (2022) have similar views by asserting that CCA plans and initiatives should allow for capacity building, learning and the sharing of expertise by all involved including, inter alia, administrators, managers, staff, the public and scientists and this can be achieved in various ways such as the creation of cooperation networks, conferences, workshops, training and educational programmes. Cohen-Shacham et al. (2016), Jiménez Hernández (2016) and SANParks (2022) support this by indicating that this approach allows for the adaptive capacity of stakeholders, including staff and management of institutions involved in CCA initiatives, to be built, which leads to improved CCA planning and implementation towards climate resilience. This approach also enhances governance systems in CCA initiatives (Bertram et al., 2017) and technical and institutional capacity (St-Laurent et al., 2022). To address climate risks and support CCA, Hallegatte et al. (2020) add that the government should specifically support the training and capacity building of officials responsible for CCA planning, implementation, oversight and management.

2.2.9 Infrastructure

From various guidelines, infrastructure considerations emerged as a theme that is required in adaptation responses. For instance, the CBD (2019), Harvey (2022) and SANParks (2022) indicate that CCA plans should consider built infrastructure. Natural England and RSPB (2019) and SANParks (2022) expand on this by stating that other physical infrastructure for

access and recreation resources (e.g., footpaths and cycle paths) should also be considered because climate change impacts can have significant effects on the safety and future maintenance of all infrastructure. Infrastructure planning of buildings, paths and fencing, amongst others, should thus consider climate impacts such as flooding and extreme fire events and be designed to be easily adapted (Natural England and RSPB, 2019; CBD, 2019).

SANParks (2022) and Harvey (2022) explain that considering climate change uncertainties, a CCA plan should consider the placement suitability of new infrastructure and the replacement of existing infrastructure. DEA and SANBI (2017), Bertram et al. (2017) and EUROPARC-Spain (2020) mention that, in aid of CCA, planned infrastructure can also specifically be designed and developed to assist with adaptation, for example, developing green infrastructure. Monty et al. (2017) and Cohen-Shacham et al. (2016) indicate that built infrastructure can also include elements to store water. Natural England and RSPB (2019) and Harvey (2022) indicate that green infrastructure can include other elements such as green roofs and green walls. Green infrastructure is advocated for by the CBD (2019) as it can contribute to reducing current and future weather- and climate-related natural hazards such as, inter alia, floods, soil erosion, and contributing to carbon stabilisation by ecosystems. According to the CBD (2019), new infrastructure should also be planned and designed to withstand the impacts of climate change towards climate resilience.

EUROPARC-Spain (2020) highlights that in certain instances, adapting to climate change may require moving existing built infrastructure and Baron et al. (2009) and Natural England and RSPB (2019) state that this can include moving infrastructure out of fire-prone areas or removing infrastructure from river corridors to minimise flood damage. According to Hallegatte et al. (2020) and Natural England and RSPB (2019), existing infrastructure can also be included in adaptation plans by planning to retrofit it to improve its climate resilience.

2.2.10 Sustainable finance

Guidelines by SANParks (2022) mention that it is critical to create a robust finance strategy for financial sustainability in aid of CCA and planning towards climate resilience. St-Laurent et al. (2022) support this by stating that this approach is required for the general long-term sustainability of CCA interventions. The CBD (2019), EUROPARC-Spain (2020) and Harvey (2022) support this by identifying the element of sustainable financing as a necessary

consideration when developing CCA plans. Hallegatte et al. (2020) add that appropriate funding should be allocated to a CCA and resilience strategy.

SANParks (2022) states that in aid of sustainable financing, conservation authorities must develop integrated adaptation plans that consider potential revenue sources, for example, enhancing its tourism plan by creating diversified and better tourism products to maximise economic returns in a responsible fashion, and thereby also contributing to social and environmental benefits. Natural England and RSPB (2019) add that it is necessary to do a costs and benefits (including economic and social benefits) analysis of the various management options, as this can be valuable in making the case for funding where budgets are limited. A cost-benefit analysis also assists with balancing trade-offs between different management objectives and assists in prioritising more cost-effective strategies for CCA (St-Laurent et al., 2022).

Gross et al. (2016) indicate that funding opportunities must be explored to implement and maintain CCA plans. Janishevski and Gidda (2010) and Monty et al. (2017) states that support from various funding sources is a crucial part of a sustainable funding strategy, and the CBD (2019) and Hallegatte et al. (2020) echo that a combination of funding tools is suggested. To this end, Cohen-Shacham et al. (2016), DEA and SANBI (2016) and EUROPARC-Spain (2020) indicate that new funding mechanisms and channels, such as valuing and charging for services, should be explored to enable sustainable funding for a CCA plan. The CBD (2019) and EUROPARC-Spain (2020) add that environmental taxes are another avenue that must be explored. Cohen-Shacham et al. (2016) and the CBD (2019) identify funding from the government and green bonds, fostering public-private partnerships to fund CCA at a larger scale, carbon credits, payment for ecosystem services and donor funding options. DEA and SANBI (2016) add that global climate and adaptation funds and small grants funding are financing options. Harvey (2022) adds debt for nature swaps and innovative insurance mechanisms to protect ecosystems.

Jiménez Hernández (2016) and the CBD (2019) add that appropriate coordination between government units responsible for CCA also assists with better financing where, as part of the overarching CCA plan, the different roles, responsibilities and budgets for CCA are clear.

2.3 UNDERPINNING THEORY – RESILIENCE

Climate resilience is the capacity to foresee, recover from, and adapt to the disturbances and impacts of climate change (CCES, 2019). Climate resilience improves the ability of people and places to absorb shocks and recover from the impacts of climate change (Mehryar, 2022). Similar to CCA, the fundamentals of good resilience planning include assessing risks and their likelihood to understand the threats to assets, conducting vulnerability assessments and determining the potential impacts, followed by identifying actions (e.g. adaptation) and developing a plan to implement the actions (Environmental Finance Center, 2020).

Borquez, Aldunce and Adler (2017) and Mehryar (2022) add that central to climate resilience is the participation of stakeholders and decision-makers and the co-production of knowledge to allow for a holistic and multi-dimensional approach. This approach seeks to increase the adaptive ability to and recover from the effects of climate change on natural, physical, social and financial systems (Borquez et al., 2017; Mehryar, 2022). Therefore, to understand how CCA and climate resilience link and the relevance of resilience to this study, it is necessary to grasp what resilience entails.

Resilience, at its basic level, means the ability to bounce back or recover from a disturbance or a shock (Allen, 1990). According to Holling (1973, p.14), resilience *"is the measure of the persistence of systems and their ability to absorb change and disturbance and still maintain the same relationships between populations or state of variables"*. According to the IPCC (2014), resilience refers to the capability of systems (social, economic and environmental) to respond to disruption by reconstituting themselves in a fashion that allows them to preserve and sustain their essential structure and function and their ability to continue to evolve, grow, transform and adapt when subjected to disturbance. Bhamra, Dani and Burnard (2011) state that countries and the ecological and social communities they house are subjected to changing environments. These changes can lead to threats that vary in frequency and severity (Bhamra et al., 2011). The threats can ensue in many forms, such as natural disasters, which pose a risk to the continuity of a system or function (Bhamra et al., 2011; Gunderson, 2000). It is thus important for systems to build resilience, which, in summary, is the ability and capability of a system to return to a stable state after a disruption has occurred (Bhamra et al., 2011).

Holling (1973) adds that while resilient systems are able to repeat and persist over time, it should be noted that homogenous systems have low resilience, whereas heterogeneous systems have greater resilience, and as such, any approach based on resilience should consider interventions at a larger regional scale rather than a local context. For example, using nature-based solutions that include land use planning and protecting ecosystems in broader landscapes plays a significant role in reducing exposure to natural disasters and lends a substantial degree of protection to the environment and people (Hallegatte et al., 2020).

When considering CCA, it is necessary to recognise that building resilience is a crucial part of any comprehensive climate action program (CCES, 2019). This is because climate resilience is concerned with developing sources of resilience to have the capacity to respond to uncertainty and maintain the flexibility required to respond to change (Nelson et al., 2007).

Miller, Osbahr, Boyd, Thomalla, Bharwani, Ziervogel, Walker, Birkmann, Van der Leeuw, Rockström, Hinkel, Downing, Folke and Nelson (2010) state that when considering how a system responds to disruption, shocks or changes, it is necessary to recognise that resilience and vulnerability are related to each other. The less resilient a system becomes, the higher the vulnerability of the system becomes in relation to disturbance (Miller et al., 2010).

Important to note, is that CCA include actions being undertaken to reduce vulnerabilities linked to a group of specific risks in specific areas (Nelson et al., 2007), while resilience recognises that vulnerabilities, as well as change, are a fundamental part of any system, and it considers how the specific adaptation actions are linked into the larger system as these actions may have consequences for other regions and at a later time (Nelson et al., 2007). CCA thus encompasses actions and processes that reduce the impact of climate change on people and places, whereas climate resilience improves their ability to absorb shocks and recover from the impacts of climate change. (Mehryar, 2022). Therefore, as adaptation looks at specific actions and the resilience approach considers the implications of these actions in the broader system, CCA and climate resilience are generally deemed complementary (Nelson et al., 2007).

On the contrary, Mehryar (2022) states that there are some cases where CCA can undermine resilience due to the ‘sunk cost effect’, i.e. where past investments are given preference in the decision-making process, thus limiting or eliminating a range of more appropriate current or

future CCA opportunities. For example, where stakeholders have previously invested in large-scale infrastructure, such as a flood barrier, the decision-making process can be preoccupied with investing in a single existing infrastructure, i.e. the existing flood barrier (Mehryar, 2022). This decision is taken even though it may not be efficient or sustainable in relation to a diverse range of suitable available alternatives (Mehryar, 2022). The preoccupation and bias to invest in the existing infrastructure, despite it not being the most suitable option available, thus decreases the general resilience of the system to new and unknown future shocks (Mehryar, 2022). Nevertheless, according to Murti and Buyck (2014), Muller (2007) and Nelson et al. (2007), when planned and implemented appropriately, CCA increases resilience against the hazards of climate change. Thus, it is clear that there is a link between CCA and climate resilience; hence, resilience theory is the underpinning theory for CCA in this study. Borquez et al. (2017) and Nelson et al. (2007) echo this by stating that viewing CCA planning through the lens of resilience theory is suitable as resilience considers risks and vulnerabilities and the capacity to adapt and respond to the risks, and recover from the impacts of climate change.

Underpinned by resilience theory, this research study seeks to identify and evaluate a conservation authority's (CapeNature's) CCA plans against the key characteristics that emerged from the literature for good CCA and resilience planning in PAs and ecosystems.

2.4 CONCLUSION

The literature review revealed ten key characteristics, ranging from 'Protected areas and protected area network' to 'Sustainable finance' for CCA (Sections 2.2.1-2.2.10), as important considerations for good CCA towards climate resilience for PAs and broader ecosystems. These informed the key characteristics that CapeNature's CCA plans were evaluated against. CCA and climate resilience were generally deemed to be synergistic (Nelson et al., 2007), and as such, this study is underpinned by resilience theory.

CHAPTER 3: RESEARCH METHODOLOGY

Chapter 3 restates the research goal and objectives and describes the research design, paradigm and methodology, including the data collection and analysis techniques for this study. Matters pertaining to research credibility and trustworthiness are discussed, and the chapter concludes with a discussion on ethical considerations of relevance to the research.

3.1 RESEARCH GOAL AND OBJECTIVES

The goal of this research is to identify and evaluate CapeNature's CCA plans against the key characteristics that emerged from the literature for CCA and resilience planning in PAs and ecosystems. The research objectives identified were to:

- clarify the concepts, identify benchmarks, and assess the constraints for CCA and resilience planning in PAs and ecosystems in the context of South Africa.
- identify the current CCA planning and management approaches of CapeNature.
- evaluate the current CapeNature CCA plans and identify the key challenges and opportunities associated with CCA planning and management towards climate resilience.
- make recommendations to CapeNature to improve their CCA and resilience planning.

3.2 RESEARCH DESIGN

Qualitative research involves the collection and interpretation of various empirical materials such as written texts, interviews, personal experiences, and observations (Denzin and Lincoln, 2003). Hlady-Rispal and Jouison-Laffitte (2014, p.594) add that qualitative research can be used to *"describe, decode, and advance the understanding of intertwined past, present, or future eclectic data (i.e., facts, activities, actors' actions, decisions, or representations)"*. This study thus adopted a qualitative research approach to explore CapeNature's CCA documentation and the perspectives of the participants.

3.3 RESEARCH PARADIGM

The research was positioned in the post-positivist paradigm, informed by the ontology of critical realism (Guba and Lincoln, 1994). An epistemology of objectivism was applicable, where it is assumed that the true reality will never be known fully, but that it is possible to estimate reality through suitable research (Guba and Lincoln, 1994). According to Guba and Lincoln (1994), post-positivism acknowledges that there are various perspectives and multiple viewpoints, which entails researching experiences and reports on the views and insights of the majority.

3.4 DATA COLLECTION

Data was collected through focus groups, semi-structured individual interviews and document analysis, as discussed below.

3.4.1 Focus groups

Focus groups allow for engaging a few people for up to two hours (Adams, 2015) to garner information on their collective views and to understand the meanings behind those views (Mishra, 2016). This study used online focus group sessions to collect data. Focus groups have a fluid agenda that can comprise a combination of closed questions and open-ended questions (Adams, 2015). It allows for richness and flexibility during the data collection process (Mishra, 2016) and for an understanding of participants' experiences, detailed inquiry into existing opinions, and to obtain new ideas and reactions to these from participants (Adams, 2015; Mishra, 2016). Regarding online focus groups, while some platforms may allow for many participants, online focus groups should be limited to 3-5 participants to allow for smooth participation (Lobe, 2017, as cited in Lobe, Morgan and Hoffman, 2020).

This study included two online focus group sessions with seven research participants (of three and four participants, respectively, as per Table 1) of under two hours each, containing a combination of closed and open-ended questions.

Table 1: Research participants

Respondent	Employment level	Focus Group 1 [FG1]	Focus Group 2 [FG2]	Individual interviews
1	Management		X	X
2	Management	X		X
3	Management		X	X
4	Management		X	X
5	Management	X		X
6	Management	X		X
7	Management		X	

During the two online focus group sessions, respondents were asked what CapeNature does towards CCA and climate resilience and what their views were on the key characteristics that emerged from the literature as important considerations for CCA planning (see Annexure A). This allowed for the triangulation of data from multiple data sources to increase the credibility and trustworthiness of the research. Focus group discussions were recorded via Microsoft Teams and Otter.ai. They were transcribed, edited, coded and analysed as guided by Pearce (2019) and Ose (2016), which aids in structuring and sorting large volumes of qualitative data for analysis. The codes are the themes (key characteristics) that emerged from the literature, and a definition was assigned to each code/theme to inform what data qualifies to be included or excluded from being coded or placed under a specific theme, as per Pearce (2019) and Ose (2016).

3.4.2 Semi-structured interviews

A semi-structured interview (SSI) approach is useful for undertaking evaluation studies and one-on-one interviews with key staff, programme managers and top management (Adams, 2015). This study used SSIs to collect data from individual participants. SSIs are valuable in research when there is a need to probe and to know the independent thoughts of a participant in an individual interview or the thoughts of individual participants in a focus group, noting that respondents may not be as open about their views when participating in a focus group (Adams, 2015; Lobe et al., 2020). It allows participants to express their own views on their own terms (Cohen and Crabtree, 2008). SSIs are guided by a clear set of instructions for researchers and can thus provide reliable, comparable qualitative data (Cohen and Crabtree,

2008). An individual interview allows for one-on-one engagement and should be approximately 1 hour in length to avoid fatigue (Adams, 2015).

As per Adams (2015), individual SSIs (that lasted approximately 1 hour) comprising closed and open-ended questions were undertaken with six of the seven individuals who participated in the focus groups. This, as per Adams (2015) and Lobe et al. (2020), allowed for individual respondents who may not have been candid in their responses during the focus groups to share their views openly. One focus group participant (as per Table 1) could not attend their individual SSI due to unforeseen circumstances but did present their input during their focus group discussion and provided CapeNature documentation to the researcher for document analysis.

During the individual interviews, respondents were asked about their understanding of each specific key characteristic and their views regarding CapeNature's CCA plans in relation to these (see Annexure B). This allowed for the triangulation of data from multiple sources to increase the credibility and trustworthiness of the research. Individual interviews were processed in the same manner as the focus group data, as guided by Pearce (2019) and Ose (2016).

3.4.3 Document analysis

According to Bowen (2009), document analysis involves the systematic review of documents and images which, inter alia, include organisational documents, maps, manuals and reports. The key characteristics that CapeNature's CCA plans were evaluated against were developed by analysing various documents, as discussed in Chapter 2. This was followed by comparing and contrasting CapeNature's CCA plans against these characteristics and hence the analysis and evaluation of CapeNature's CCA documents as discussed in Chapters 4 and 5.

The following CapeNature documents, as per Table 2, were collected and consequently evaluated against the key characteristics for good CCA in conservation.

Table 2: CapeNature documents

Document reference	Documents reviewed
1-CNSP	CapeNature 5-year Strategic Plan 2020-2025 (CNSP) (CapeNature, 2020)
2-CNAPP	CapeNature Annual Performance Plan 2023-24 (CNAPP) (CapeNature, 2023a)
3-WCBSP	Western Cape Biodiversity Spatial Plan (WCBSP) (Pool-Stanvliet, Duffel-Canham, Pence and Smart, 2017)
4-WCCCRSIP	Western Cape Climate Change Response Strategy Implementation Plan (WCCCRSIP) (Brown, Chihumbiri, Jansen, Jennings-Boom, Tshindane and van Weele, 2023)
5-WCBSAP	Western Cape Draft Provincial Biodiversity Strategy and Action Plan 2020-2030 (WCBSAP) (DEA&DP, 2023)
6-WCPAES	Western Cape Protected Areas Expansion Strategy 2021-2025 (WCPAES) (CapeNature, 2021)
7-WCSWMP	Western Cape Sustainable Water Management Plan 2017-2022 (WCSWMP) (DEA&DP, 2018)
8-WCSOB	Western Cape State of Biodiversity Report-2017 (WCSOB) (Turner, 2017)
9-WCSOC 2021	Western Cape State of Conservation Report-2021 (WCSOC 2021) (CapeNature, 2022)
10-WCSOC 2022	Western Cape State of Conservation Report-2022 (WCSOC 2022) (CapeNature, 2023b)
11-IBC	An Investment Business Case of the Income Generation Potential of Protected Areas in the Western Cape (IBC) (Purnell, 2015)

3.4.4 Sampling techniques and sample sizes

Purposive sampling identifies specific items to be included in the sample of a research study rather than employing a random sampling approach (Campbell, Greenwood, Prior, Shearer, Walkem, Young, Bywaters, and Walker, 2020). Tongco (2007) and Campbell et al. (2020) state that purposive sampling is a kind of non-probability sampling and that it is a non-random technique that includes a researcher deliberately choosing informants based on the

characteristics or qualities that they possess. This is a useful technique when one needs to study a specific field with knowledgeable experts (Tongco, 2007). Therefore, for the focus groups and the individual interviews, this study used purposive sampling to inform the seven research participants who were the key knowledge holders of CapeNature's CCA planning processes, plans and management approaches. Purposive sampling was also used to inform the CapeNature documents to be evaluated and these were either provided to the researcher by the participants and/or obtained via the CapeNature website and/or on the internet.

According to Boddy (2016) and Mthuli, Ruffin and Singh (2021), six interviews are suitable for qualitative research. Boddy (2016) states that sample size is informed by the context and the research being undertaken, and Mthuli et al. (2021) indicate that research saturation is reached when there is a repetition of knowledge, no new knowledge emerges, and the insights from participants become repetitive.

Climate change planning is a specialised field; hence, the target population of the study was the management echelon (i.e. seven executive, senior and programme managers) of CapeNature, who are the key knowledge holders of the entity's CCA approaches (see Section 3.4.1, Table 1). Also, due to the nature of the study of evaluating the current CCA plans of CapeNature, data saturation seemed plausible and became evident during the data collection process (see Chapter 4).

3.5 DATA ANALYSIS

Thematic analysis combined with pattern matching (Pearse, 2019) was used to analyse the focus group data, semi-structured interview data and the CapeNature documents. According to Braun and Clarke (2012, p.2), *"thematic analysis is a method for systematically identifying, organising, and offering insight into patterns of meaning (themes) across a data set"*. It is a flexible and accessible approach to qualitative data analysis, allowing for the systematic coding and analysis of the data that can be linked back to the theory (Braun and Clarke, 2006; Braun and Clarke, 2012).

Deductive thematic analysis uses theory as its point of departure (Fereday and Muir-Cochrane, 2006; Pearse, 2019), meaning that propositions (or pre-determined themes) are derived from the theory or literature instead of the themes being generated from the data

collected (Pearse, 2019). Therefore, a deductive thematic, theory-driven approach is a top-down approach where the researcher first familiarises themselves with existing theoretical perspectives in a specific phenomenon, then derives themes from the theory that they subsequently use to analyse the data against (Braun and Clarke, 2012; Pearse, 2019; Xu and Zammit, 2020). This is because the researcher is essentially interested in linking or matching collected data to the themes (that emerged from the literature) to determine if the themes explain the data (Sinkovics, 2018; Pearse, 2019; Bouncken, Qiu, Sinkovics and Kursten, 2021). Themes that emerge from the theory are defined, described, or qualified to guide whether the data collected can be included or excluded from a specific theme (Pearse, 2019). For this research study, the deductive thematic analysis approach combined with pattern matching proved to be very useful in establishing the pre-determined themes and matching the collected data against the pre-determined themes as part of the data analysis process, as per Pearse (2019).

As part of the deductive thematic analysis process for this research, as per Pearce (2019), a table recording the hits and misses was developed (see Section 4.2, Table 3) to ascertain which themes were either confirmed or refuted by the data contained in CapeNature's CCA plan documents. Yes ("Y") and No ("N") were used to indicate when a specific document either confirmed or refuted a theme, and Other ("O") when the data had nothing to do with the theme.

3.6 RESEARCH CREDIBILITY AND BIAS

It is acknowledged that a researcher is not entirely independent from research, but that objectivity is possible by using suitable mechanisms to reduce bias (Rehman and Alharthi, 2016). Triangulation refers to the combination of different methods, in a complimentary manner, in the study of the same phenomenon (Mishra, 2016), and Bowen (2009) indicates that triangulation is necessary to avoid the perception that a study is the biased view of a single researcher using a single research method or source. Therefore, it is best for document analysis to be used in combination with other qualitative research methods, which can include document analysis in combination with semi-structured interviews, allowing for multiple views, which then improves the credibility, trustworthiness, objectivity and reliability of the research (Bowen, 2009; Panhwar, Ansari and Shah, 2017). In addition, according to Mishra (2016), focus groups are deemed to have a high degree of validity.

The researcher is a conservation and biodiversity management practitioner in South Africa. Therefore, to reduce potential bias, multiple methodologies, as guided by Bowen (2009), Mishra (2016) and Panhwar et al. (2017), which included document analysis, focus groups and one-on-one interviews, were employed in this study. Focus groups and individual interviews were recorded and transcribed (using automated programmes) to retrieve accurate and contextually correct data at a later stage, thus reducing researcher bias.

3.7 ETHICAL CONSIDERATIONS

As human participants were involved in the study, the researcher obtained ethical clearance from Rhodes University's Ethics Committee (Review Reference: 2023-7152-7796). The risk level was low as participants could remain anonymous in the study or be acknowledged, meaning that their name and designation at the organisation would become public knowledge. While all participants opted to be acknowledged in the 'acknowledgements' section of the mini-thesis, this was based on the understanding that the details of which CapeNature employee communicated what information will remain confidential and as such, the participants' recordings and interview transcripts will be kept confidential.

A letter of informed consent (Annexure C), which outlined the details of the study and interview process, was completed by the participants ahead of the interviews. All participants were given the option of anonymity and were afforded the opportunity to withdraw from the research at any time, as per Mishra (2016) and Lobe et al. (2020). Regarding online interviews, as per Lobe et al. (2020), consent was obtained from participants to record the focus groups and one-on-one interviews prior to the interviews being conducted, and this was reiterated at the start of each interview.

Mishra (2016) and Lobe et al. (2020) indicate that it is critical to ensure the privacy and confidentiality of data obtained from participants. To this end, the Protection of Personal Information Act in South Africa aims to prevent the unlawful collection, use and distribution of personal information (Protection of Personal Information Act 4 of 2013). This Act compels a researcher to obtain prior consent from an organisation or individual to partake in a study and to ensure that any personal information obtained is kept safe and confidential (Adams, Adeleke, Anderson, Bawa, Branson, Christoffels, de Vries, Etheredge, Flack-Davison, Gaffley, Marks, Mdhluli, Mahomed, Molefe, Muthivhi, Ncube, Olckers, Papathanasopoulos,

Pillay, Schonwetter, Singh, Swanepoel and Ramsay, 2021). Consequently, this research complied with the prescripts of the Protection of Personal Information Act 4 of 2013.

3.8 CONCLUSION

This study employed a qualitative research approach and used theory-driven evaluation to analyse CapeNature's CCA plans. Eleven CapeNature documents and seven research participants were selected through purposive sampling. The research participants partook in focus groups and individual SSIs. The study considered matters pertaining to research credibility, bias and limitations and complied with ethical requirements.

CHAPTER 4: RESEARCH FINDINGS

Chapter 4 presents the findings of the research study. The findings of the interviews, focus groups and document analysis are presented and explained below. A summary of the key challenges and opportunities that emerged from the findings is presented in Section 4.3.

4.1 CURRENT CAPENATURE CCA PLANNING AND MANAGEMENT APPROACHES

The specific findings (CapeNature's current CCA approaches), which relate to each of the themes identified, are presented under Section 4.1. The findings are further made sense of, synthesised and discussed in Section 4.2 to identify challenges and opportunities.

Section 4.1 indicates the results of what was found from the focus groups, individual interviews and document analysis, and it also shows some details of how the CapeNature CCA documents are aligned with the key characteristics of good CCA.

4.1.1 Protected areas and protected area network

The focus groups (FGs) indicated that CapeNature does not have a single collated document that is considered to be this provincial conservation authority's CCA plan, i.e. *"we don't have a specific one place strategy because we don't see the desire to draft a separate document and to say that this is the entity's Climate Change Response Strategy"* [FG1]. It was added that CapeNature has *"various climate change responses that are captured in various different other parts"* [FG2], which the researcher understood and confirmed to mean various documents. These statements are supported by the findings described, per theme, under Section 4.1.

The theme of 'Protected areas and protected area network' emerged organically from the focus groups as part of CapeNature's current CCA approaches. The respondents indicated that CapeNature has the WC Protected Areas Expansion Strategy [FG1, FG2, Respondents 1, 2, 3, 4, 5 and 6] and that this is one of the primary ways in which the organisation seeks to reduce climate risks and increase resilience to climate change [FG1, FG2, Respondents 2 and 6]. The respondents indicated that this strategy is based on the organisation's biodiversity

spatial plan that identifies important areas for biodiversity, and that it considers water security and incorporates PA networks and corridors [Respondents 2, 3, 4 and 6].

Various documents analysed support these views (see Table 3 in Section 4.2), for example, the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020), the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a), and the WC Draft Provincial Biodiversity Strategy and Action Plan 2020-2030 (DEA&DP, 2023) indicate plans for CapeNature to have an expanded conservation estate supported by the indicator of the *"number of hectares under the conservation estate"* with a target of *"5000 hectares"* per annum. (CapeNature, 2023a, p.29). The WC Protected Areas Expansion Strategy 2021-2025 (CapeNature, 2021, pp.4, 6) specifically indicates the intention to facilitate *"a strong network of private and state protected areas"* as a key *"mechanism to conserve biodiversity and improve land management"* to maintain *"ecological processes"* towards *"climate change resilience"*.

The respondents also mentioned that CapeNature manages various PAs and employs various mechanisms towards climate resilience [FG1, FG2, Respondents 1, 3 and 4]. For example, through fire management and through alien clearing to reduce fuel load for fires, and having veld fire management guidelines and response plans, implementing controlled burns and putting firebreaks in place to reduce the size of fires in order to contribute to managing the PAs effectively and to keep biodiversity and resilience of the environment at its highest [FG1, Respondents 1, 4 and 5].

Various documents substantiated these views. These include the WC Biodiversity Spatial Plan (Pool-Stanvliet, Duffel-Canham, Pence and Smart, 2017) and the WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023, p.29) that identify specific actions for CapeNature such as facilitating the *"effective management of the conservation estate; achieve protected area targets; increasing areas under conservation protection*, *with a specific focus on under-protected ecosystems, critical biodiversity areas and strategic water source areas and support ecosystem rehabilitation"*. The WC Draft Provincial Biodiversity Strategy and Action Plan 2020-2030 (DEA&DP, 2023) adds that relevant actions, amongst others, include removing alien vegetation, assessing the invasive alien eradication efforts, and the management of wildfires.

From the findings, it was evident that CapeNature's current CCA approaches considered the 'Protected areas and protected area network' theme. Aspects that emerged from the data under this theme include expanding the PA network, establishing corridors to enable connectivity between PAs, and managing PAs effectively through activities such as alien clearing and fire management.

4.1.2 Ecosystem-based adaptation

This theme emerged organically from the focus groups as part of CapeNature's current CCA approaches. Respondents indicated that the nature of CapeNature's mandate forces the organisation to look at matters holistically and to employ EBA. Some examples included: through the management of PAs, ecosystem services such as water and clean air are provided and maintained to the *"benefit of the ecosystem and people"* [Respondents 2 and 4], and PAs enable other services such as *"access, for traditional and cultural purposes"* as well [Respondent 4]. The respondents were of the view that CapeNature has the WC Biodiversity Spatial Plan that includes Ecological Support Areas, Critical Biodiversity Areas, corridors (e.g. upland lowland corridors that allow species movement from warmer to cooler areas) and major climate change adaptation corridors across the WC [FG1, Respondents 2, 3, 4 and 6]. The respondents added that while this plan, for example, considers and allows for species movement, *"the WC Biodiversity Spatial plan focuses a lot on ecological support areas which encourage people to buffer themselves from high-risk areas such as fire or flooding"* [FG1] and therefore this plan considers the well-being of nature and people. It was added that the natural system in the WC holds the key to resilience in the long term [FG1]. Therefore, CapeNature protects natural systems in the PAs and identifies climate change adaptation corridors to maintain the *"functionality"* [FG1, FG2, Respondents 1, 2 and 3] of the natural systems that house various aspects that human well-being relies on, for example, catchments for water [FG1, FG2, Respondents 1, 3, 5 and 6] or agriculture for food security [FG1, Respondents 2 and 3]. These views were supported by various documents (see Table 3 in Section 4.2). For example, the WC Sustainable Water Management Plan 2017-2022 (DEA&DP, 2018, pp.1, 21) indicates that in terms of the *"observed impact of climate change,"* such as *"water scarcity due to prolonged droughts"* and floods from severe weather events, it recognises that there is a need to *"protect water resources to benefit both nature and people"*. The WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023) also states that EBA and nature-based solutions are critical elements to building climate resilience. It specifically advocates for the continued *"management of*

ecosystems, wilderness areas and the conservation estate", continued efforts in terms of *"removing alien vegetation infestations"* and *"wildfire management"*, and to *"restore ecological functioning"* for ecosystem services such as the *"flood attenuation function"* (Brown et al., 2023, pp.29, 30, 31, 32). The WC Draft Provincial Biodiversity Strategy and Action Plan 2020-2030 (DEA&DP, 2023, pp.11, 36) confirmed that the work of CapeNature, to manage ecosystems and ecological infrastructure, seeks to maintain and enhance *"ecosystem services to improve the resilience of communities to climate change"* and the entity having specific tasks such as, inter alia, implement actions to *"improve water security via ecosystem rehabilitation"* and *"prevent habitat loss of priority biodiversity"*.

In support of the EBA approach, the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, p.8) and the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, p.23) express part of the organisation's vision as *"conserving nature for resilience"*, and part of its mission as *"to conserve, protect and restore our natural environment"*. The CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, p.10) also iterate that *"ecological infrastructure delivers valuable ecosystem services to both people and the environment"*. To this end, the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, pp.2, 18) indicates that the entity seeks to ensure long-term resilience *"through the conservation of protected areas, biodiversity, ecosystems, ecosystem services and ecological infrastructure"* and the document contains dedicated targets in this regard that pertain to PA expansion, managing the PAs effectively and contributing to CCA through, amongst others, the *"management of critical water catchment areas, the prevention of criminal activities linked to biodiversity, the safeguarding of communities through fire and disaster prevention"*. CapeNature's State of Conservation Report for 2021 (CapeNature, 2022, p.3) highlight the focus on improving the status of ecological infrastructure for the provision of ecosystem services and *"incorporating climate change corridors aimed at mitigating the potential impacts of climate change on the social and ecological communities of the province"*.

From the findings, it was evident that CapeNature's current CCA approaches considered the 'EBA' theme. Aspects that emerged from the data under this theme include providing ecosystem services to benefit both nature and people and building climate resilience through a combination of mechanisms to protect and manage PAs and catchments through various ecological management and restoration activities.

4.1.3 Science-based CCA

This theme emerged organically from the focus groups as part of CapeNature's current CCA approaches. The focus groups indicated that they engage in symposiums and conferences to obtain updated knowledge on the implications and forecasts of what to expect in terms of climate change [FG1, FG2]. The respondents indicated that this knowledge informs their CCA plans, for example, to plan for additional hotter days as the climate will be drier, and the rainfall season may shift, with less rain in the long term [FG1]. Various respondents stressed that plans must be science-based, meaning that they should be *"empirical science"* [FG1, Respondent 5] that is *"peer-reviewed"* [FG2, Respondents 1 and 4] and is based on *"factual statements to support your position"* [FG1]. This is critical as it *"assigns credibility and defensibility to the strategy and actions"* [FG1] that will be implemented. To this end, the respondents explained that CapeNature does ecological monitoring to inform their decisions [FG1, FG2, Respondents 2, 4, 5 and 6]. These views were supported by the WC Draft Provincial Biodiversity Strategy and Action Plan 2020-2030 (DEA&DP, 2023, pp.49, 50, 51), which indicates that conservation initiatives must be informed by sound knowledge that is *"evidence-based and robust"*, and to this end, the strategy identifies implementation actions for CapeNature such as, inter alia, to *"drive strategic biodiversity monitoring and research priorities"* and *"track and report on the status of threatened and priority ecosystems"*.

As per CapeNature's Annual Performance Plan 2023-24 (CapeNature, 2023a) and the WC State of Conservation Reports for 2021 (CapeNature, 2022) and 2022 (CapeNature, 2023b), the entity responds to this by developing the WC State of Conservation Report on an annual basis that is informed by a variety of monitoring and surveillance methods, mapping of e.g. terrestrial ecosystems and the attributes that they house. As per CapeNature's Annual Performance Plan 2023-24 (CapeNature, 2023a), the State of Conservation Reports feed into the WC State of Biodiversity Report, which is updated on a five-year cycle. The State of Biodiversity Report, in turn, feeds into other documents such as the WC Biodiversity Spatial Plan and the WC Protected Areas Expansion Strategy 2021-2025. Some respondents added that, through collaborations, they use data from reputable studies and organisations such as the South African National Biodiversity Institute to inform their decisions, tools and strategies, such as their spatial planning tool and other umbrella strategies, for example, the WC Protected Areas Expansions Strategy [Respondents 2, 3 and 6]. The CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, p.15) confirmed that in aid of garnering

scientific knowledge, the entity will continue to practice *"collaborative research and citizen science to maximise its biodiversity capability"*.

The respondents also indicated that the entity's strategies are informed by vulnerability assessments [Respondents 2 and 6], modelling [Respondents 2, 4, 5 and 6] and scenario planning [Respondents 2 and 4]. The State of Conservation Report (CapeNature, 2022, p.18) confirms this by indicating the *"modelled predicted impacts of Climate Change in the WC"* such as *"decrease in rainfall; increased severity of drought; higher average temperature; increase in flooding and storm surges; and increased fire risk"*. This approach is supported by the WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023, pp.6, 25) that directs the use of a *"science-based"* approach to *"decision-making"* through, e.g. conducting *"a provincial vulnerability and risk assessment to understand the risk posed by climate change"* as well as the WC Sustainable Water Management Plan 2017-2022 (DEA&DP, 2018, pp.30, 72) that states that *"sound knowledge and scientific research should form the foundation of all interventions"* and *"reliable monitoring data, to build realistic predictive models"* for *"various scenarios"* relating to, inter alia, *"climate change"* or *"invasive alien infestation"* or *"water delivery"* is required for the WC.

It was emphasised that it is important for CapeNature to stay abreast of current science, use the best available climate change data, and consistently and over the long term check whether the organisation is on the right track in terms of CCA [Respondents 1 and 3]. To this end, CapeNature develops the WC Biodiversity Spatial Plan based on the data that is *"the most up-to-date, accurate and scientifically defensible as possible"* (Pool-Stanvliet et al., 2017, p.9) at the time and seeks to collaborate with other organisations and researchers as indicated in its annual performance plan (CapeNature, 2023a). Respondent 4 added that CapeNature's CCA plans should also draw on science from the *"social science"* side to understand how people are responding or will respond to the impacts of climate change so that the CCA plans can incorporate additional appropriate responses.

From the findings, it was evident that CapeNature's current CCA approaches considered the 'science-based' theme. Aspects that emerged from the data under this theme include conducting ecological monitoring, collaborating with reputable researchers and institutions to garner data to keep abreast of the most current and defensible science, and employing

predictive modelling and scenario planning to inform and improve decisions, actions and strategies in aid of CCA.

4.1.4 Participatory

This theme emerged organically from the focus groups as part of CapeNature's current CCA approaches. The respondents indicated that they use participatory approaches from an internal and external perspective [FG1, FG2]. The respondents were of the view that a participatory approach to CCA is an important element, as CCA plans and strategies require buy-in and shared ownership to enable successful implementation [FG1]. The respondents added that some of CapeNature's CCA strategies would also not necessarily be on the reserves under their management and, hence, participation by, inter alia, landowners and municipalities is required as buy-in is critical [FG1, FG2]. The respondents stated that, in general, *"in terms of broader public participation, CapeNature's 5-year Strategic Plan and Annual Operations plan [Annual Performance Plan] are compiled and reported against through a participatory process, where it is tabled at Provincial Parliament. The process enables the public to engage and raise questions through the various standing committees in terms of our accountability for what we're planning to do, and then what we have done"* [FG1].

According to the respondents, a very good example of the participatory approach is the development of the WC Protected Areas Expansion Strategy 2021-2025, which covers private and other government departments' land; therefore, a lot of *"participation"* and *"collaboration"* takes place with, inter alia, NGOs and landowners through a number of mechanisms such as stewardship review committees, working groups, peer learning and knowledge exchanges in order to co-create a product and have joint ownership and accountability of it [Respondents 1, 2, 3 and 6]. Confirming this, the WC Protected Areas Expansion Strategy 2021-2025 (CapeNature, 2021) states that it was developed with key provincial government partners such as the Department of Environmental Affairs and Development Planning and the City of Cape Town; NGOs such as Table Mountain Fund (TMF), Birdlife South Africa and WWF-South Africa; national government, e.g. the South African National Biodiversity Institute; landowners and communities. The CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, p.12) confirms the use of the participatory approach by indicating that the entity adopted a landscape conservation model that uses *"a stronger focus on leveraging strategic partnerships with key stakeholders like local municipalities, provincial and national government departments, NGOs, landowners,*

communities and other conservation agencies to achieve landscape-level conservation outcomes". The CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, p.19) also states that the entity employs collaborative and cooperation approaches that enables partnerships with, e.g. *"sector organisations and bodies, research, academic, not-for-profit institutions and landowners"*.

Respondents highlighted that another good example of a *"co-developed"* plan is the WC Biodiversity Spatial Plan that was, amongst others, developed in close *"collaboration"* with the Department of Environmental Affairs and Development Planning and with input from other organisations such as the South African National Biodiversity Institute, and the respondents explained that there is joint accountability concerning this plan [Respondent 2, 3, 4 and 6]. The WC Biodiversity Spatial Plan (Pool-Stanvliet et al., 2017) document confirms the use of participatory approaches in its development, in collaboration with the Department of Environmental Affairs and Development Planning and the South African National Biodiversity Institute.

The respondents also indicated that within CapeNature, strategies are developed through internal participation [FG1, FG2] to facilitate that *"scientific, conservation operational matters, tourism and training, and capacity building needs are taken into consideration to meet the objectives of the strategy and to ensure that there are no 'one-man shows' when it comes to planning and producing protocols"* [FG1]. As an example, the document 'An Investment Business Case of the Income Generation Potential of Protected Areas in the WC' (Purnell, 2015, p.19) indicates that it was developed through a participatory approach, which enabled CapeNature staff from all functional areas in the organisation to contribute *"their insights and ideas"*.

From the findings, it was evident that CapeNature's current CCA approaches considered the 'Participatory' theme. Aspects that emerged from the data under this theme include engaging, consulting and collaborating with various stakeholders to, where necessary, co-create products and hence facilitate buy-in, shared ownership and accountability concerning the product.

4.1.5 Good governance

This theme emerged organically from the focus groups as part of CapeNature's current CCA approaches. The respondents indicated that because climate change is identified as a key risk to the entity and to biodiversity, it *"receives attention"* from a governance perspective *"at various levels"* of the entity [FG1]. The respondents mentioned that CapeNature's CCA plans are integrated and guided by legal frameworks [Respondents 4, 5 and 6] that the various functional areas in CapeNature incorporate climate change concerns in their plans and strategies [FG1, Respondents 2, 3], and that the entity reports to the Board on a quarterly basis about their climate change responses [FG1, Respondents 2 and 3]. Demonstrating the view that the entity recognises climate change as a risk is CapeNature's Annual Performance Plan 2023-24 (CapeNature, 2023a, p.40) which identifies not achieving *"Climate change resilience"* as a key risk. In addition, the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, p.14) indicates that the entity recognises the risk and impact of climate change on nature and people and *"will focus on local-level mitigation strategies and strategic adaptation measures in the form of risk reduction and responsive planning, protecting and restoring ecological infrastructure and the adoption of an integrated catchment management approach"* towards climate change resilience.

The respondents mentioned that good governance at CapeNature includes adhering to relevant laws, developing policy and procedures, and adhering to those [Respondents 1, 2, 4, 5 and 6]. In support of this, the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, p.26) states that the entity is committed to continue its focus on ensuing good governance in all aspects of the work that the entity undertakes and, to this end, identified its key risks with a dedicated functional area committed to governance and risk to, inter alia, *"ensure the effective management of organisational risk"*, *"internal control"* and adherence to applicable legislation.

The respondents highlighted that CapeNature considers and responds to risks across various functions [Respondents 2 and 4], and it was indicated that the entity is accountable [Respondents 2, 3 and 4] and transparent [Respondent 4]. CapeNature's Annual Performance Plan 2023-24 (CapeNature, 2023a, p.40) supports these views by identifying various risks and mitigation responses to, for example, the risk of *"biodiversity loss"*, where the responses, inter alia, include *"co-ordination and planning of integrated invasive alien plant clearing and fire management"* and *"provision of specialist commentary on the development of*

Integrated Development Plans and Spatial Development Frameworks of municipalities". CapeNature's Annual Performance Plan 2023-24 (CapeNature, 2023a, p.41) further identifies the challenge of financial or *"economic sustainability"*, expressing the challenge as the key risk of *"Increased fiscal pressures"* to which mitigation responses include "*effective budget, planning and expenditure management; explore funding and investments opportunities and secure strategic partnerships; identify and explore new and diversified revenue generation opportunities"* and *"explore opportunities for investment in innovation and technology"*.

The respondents shared that the organisation has various other more operational governance structures that involve other parties [FG1, FG2]. To this end, the respondents mentioned that as part of their Protected Areas Expansion Strategy, they declare private PAs through their biodiversity *"stewardship programme"* and enter into *"biodiversity agreements with landowners"*, they play an oversight role in the management of those areas to ensure good governance as those areas are a *"very important part of climate change adaptation"* [FG1]. The WC Protected Areas Expansion Strategy 2021-2025 (CapeNature, 2021, p.24) confirms that through its implementation, CapeNature employs cooperative governance, co-management and effective oversight by entering into formal agreements with landowners to declare private PAs, where CapeNature reviews and monitors the PA management plans and employs relevant structures such as the *"WC Biodiversity Stewardship Reference Group"* to facilitate *"coordination and collaboration within the community of practice in the WC"*.

From the findings, it was evident that CapeNature's current CCA approaches considered the 'Good governance' theme. Aspects that emerged from the data under this theme include recognising climate change as a risk, identifying risk responses, acknowledging the lack of suitable financial resources, and identifying responses to try to mitigate these risks. Co-governance with relevant stakeholders emerged as a necessary aspect of CCA as well.

4.1.6 Communication

This theme emerged organically from the focus groups as part of CapeNature's current CCA approaches. The WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023, p.61) recognises that there is a *"low level of climate literacy among South Africans"*, and thus, the implementation plan identifies *"Climate Change Communication and Awareness"* as an important response programme in the WC. The respondents indicated that, in terms of communication, CapeNature's CCA plans include environmental education and

awareness that targets youth and communities [FG1, FG2, Respondents 1, 2, 3, 4, 5 and 6]. To this end, the organisation has an advocacy and environmental awareness section that has *"a syllabus type of approach, in terms of extension work to schools, that speak to climate change"* [FG1]. The respondents added that, as an example, the PA management plans (that inform the management of the PAs under the management of CapeNature) are communicated well through Protected Area Advisory Committees, conservation managers and stakeholder engagement officers who engage and communicate with stakeholders, landowners and partners [FG2, Respondents 1 and 4]. One respondent mentioned that there are *"good structures in place for communication"* [Respondent 1].

The theme of communication is supported by the WC Sustainable Water Management Plan 2017-2022 (DEA&DP, 2018, pp.vi, 66), which identifies the need for *"public awareness campaigns to educate"* and *"promote knowledge transfer, increased awareness and behaviour change"* through *"a consistent and coordinated communication strategy"*. To this end, the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, pp.12, 18) states that it will give strategic focus to *"driving advocacy projects and programmes amongst all stakeholders with specific focus on youth, learners and communities at large"*, and in terms of enhancing resilience, this strategy has the following indicator i.e. *"Number of stakeholder interventions to enhance biodiversity conservation and landscape resilience"*. The CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, p.12) also mentions that the entity does environmental education and awareness initiatives through the *"promotion of biodiversity and climate change awareness"*, and the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, p.32) has an indicator i.e. *"Number of environmental awareness activities conducted"* with an annual target of *"300"*.

One respondent indicated that *"all plans and strategies are very much free and available on the website"* [Respondent 4]. An example is the WC Biodiversity Spatial Plan (Pool-Stanvliet et al., 2017) document that also advocates for the plan to be shared and *"made available to end-users"* such as municipalities. One respondent mentioned that internal communication is facilitated through various mechanisms, for example, posters [Respondent 2]. This is supported by the 'An Investment Business Case of the Income Generation Potential of Protected Areas in the WC' (Purnell, 2015, pp.21, 59) document that highlighted the need to communicate with internal staff through e.g. *"awareness raising initiatives", "blogs"* and *"video"* resources.

From the findings, it was evident that CapeNature's current CCA approaches considered the 'Communications' theme. Aspects that emerged from the data under this theme include conducting environmental education and awareness activities with school groups and communities and sharing information with external and internal stakeholders through various mechanisms.

4.1.7 Policy, frameworks and mainstreaming

This theme emerged organically from the focus groups as part of CapeNature's current CCA approaches. The respondents stated that the WC provincial Climate Change Response Strategy, *"speaks across provincial government departments"* and *"it indicates what we will collectively do"* [FG1]. The respondents indicated that, therefore, they are of the view that the *"mainstreaming"* of climate change concerns across the WC government departments' plans is an example of something that works [FG1]. This view is supported by the WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023, p.6), which states that this plan should be *"fully integrated across WC Government as it provides the overriding policy direction for achieving climate resilient objectives of the province"*.

Using the WC Biodiversity Spatial Plan as an example, the respondents indicated that at a provincial level, this plan that CapeNature is responsible for developing is mainstreamed and entrenched into legislation and land use planning towards climate resilience [FG1, FG2, Respondents 1, 2, 3, 4, 5 and 6]. These views are supported by the WC Biodiversity Spatial Plan (Pool-Stanvliet et al., 2017, p.46), which states that it is a tool for *"decision-makers and planners"* to respond to and *"reduce the effects of global climate change by integrating the Biodiversity Spatial Plan map and guidelines into land use planning and decision-making"*. To this end, the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, pp.17, 28) states that the entity facilitates the *"mainstreaming of the uptake of biodiversity considerations into land use planning, regulation and management at a municipal scale"* and has the indicators, *"number of 'State of Conservation Reports' completed"* and "*number of 'State of Biodiversity Reports' completed"*. In relation to the aforementioned, noting that the municipalities develop municipal scale Spatial Development Frameworks and Integrated Management Plans, the State of Biodiversity Report (Turner, 2017) reports on the extent to which biodiversity has been mainstreamed into municipal spatial planning such as municipal Spatial Development Frameworks, Integrated Development Plans and Environmental Management Frameworks.

The respondents indicated that CapeNature's strategies and plans are aligned with relevant international conventions and policies, as well as national legislation, and respondents were of the view that their plans were not developed in isolation and are aligned with larger overarching CCA and resilience approaches [FG1, FG2, Respondent 6]. To this end, the respondents explained that CapeNature takes heed of and *"takes direction from various global conventions"* and national policy frameworks. Supporting these views, the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, p.2) identifies international fundamentals such as, inter alia, the Convention on Biological Diversity; United Nations Framework Convention on Climate Change and the Kyoto Protocol; and the United Nations Educational, Scientific and Cultural Organisation - Man and Biosphere Programme; and the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, p.3) adds the United Nations Paris Agreement on Climate Change as a fundamental that the entity takes into consideration as well. In terms of alignment with national policy and legal frameworks, the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, p.3) and the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, p.3) indicate that they consider various instruments such as, amongst others, the National Environmental Management: Biodiversity Act, National Environmental Management: Protected Areas Act; Spatial Planning and Land Use Management Act; National Water Act and the Climate Change Bill.

The respondents also mentioned that within the WC province, CapeNature, as part of the Department of Environmental Affairs and Development Planning, *"provides a lot of input into provincial level planning"* [FG1, FG2] as they are seen as the *"biodiversity experts"* [FG1] for the province. This is confirmed by the State of Conservation Reports of 2021 (CapeNature, 2022, p.4) and 2022 (CapeNature, 2023b, p.4), which indicate that the data in the State of Conservation Reports and the State of Biodiversity Reports contributes to *"the development of biodiversity legislation and policies, provincially and nationally"*. In aid of sustainable financing, the document 'An Investment Business Case of the Income Generation Potential of Protected Areas in the WC' (Purnell, 2015, p.54) also recognises the need for CapeNature to operate and be embedded in other relevant overarching policy frameworks such as the *"Financial Management Act"*.

From the findings, it was evident that CapeNature's current CCA approaches considered the 'Policy, frameworks and mainstreaming' theme. Aspects that emerged from the data under this theme are developing plans that are aligned with international, national and provincial

strategies and plans towards climate resilience. Mainstreaming CapeNature's plans to guide appropriate development to conserve biodiversity in aid of CCA and resilience emerged as well.

4.1.8 Capacity

The theme of 'Capacity' did not emerge organically during the focus groups discussions, however, when the researcher posed a question of whether the focus groups thought that capacity or capacity building was an important element of CCA, both focus groups responded *"Yes"*, and the groups stated that CapeNature take matters pertaining to 'capacity' into consideration [FG1, FG2]. This view is supported by the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, p.13), which states that it will continue to demonstrate *"reflexive competencies and capabilities required to protect our natural heritage for the benefit of people and a sustainable environment"*. The respondents explained that in CapeNature the term capacity means having 'capacity' such as resources, as well as capability development, which means developing the 'ability' of external and internal stakeholders to make and implement decisions [FG1, FG2, Respondents 1, 2, 4, 5 and 6].

Linked to external stakeholders, for example, the respondents mentioned that *"in terms of the WC Biodiversity Spatial Plan, a lot of times we actually have sat in person, explaining the plan"* [FG1] thus building the capacity of municipalities [FG1, FG2, Respondents 2 and 6] and one respondent indicated that it is evident that these capacity building sessions are working as the information is finding expression in the municipalities Spatial Development Frameworks that they are producing [Respondent 6]. Confirming this approach, the WC Draft Provincial Biodiversity Strategy and Action Plan 2020-2030 (DEA&DP, 2023, p.53) specifically identifies implementation actions for CapeNature as follows, *"develop and implement a biodiversity-related capacity building programme for local government councillors"* with the target of *"at least one capacity building intervention aimed at councillors is held annually"*, and identifies an indicator of *"environmental stakeholder capacity building initiatives are implemented"*.

To this end, the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, p.32) has the indicator *"number of environmental capacity building activities conducted"* with an *"annual target of 80"*, and the WC Biodiversity Spatial Plan (Pool-Stanvliet et al., 2017, p.iv) indicates that CapeNature implements capacitation initiatives *"through ongoing*

technical support and capacity building in priority sectors" including, inter alia, municipalities. One respondent indicated that linked to *"some of the projects or programs that we roll out"*, such as environmental capacity building, they have noticed an improvement in how the public responds because the intended outcomes of interventions with the public *"are beginning to feature"* [Respondent 4].

The WC Draft Provincial Biodiversity Strategy and Action Plan 2020-2030 (DEA&DP, 2023, p.52) states that for CapeNature staff *"an assessment of provincial scientific capacity"* should be undertaken and staff *"should receive the necessary training for ongoing skills improvement"*, and the State of Biodiversity Report (Turner, 2017) identifies the intention to facilitate learning environments and to grow and enhance resources and capacity. In support of these intentions, the respondents explained that in certain instances the entity builds internal capacity through the *"formal identification of a skill or a competency gap"* assessment and facilitates a *"personal development plan for an individual official"* to build their capacity [Respondent 4]. The respondents added that CapeNature also enables formal and informal training and mentoring to build understanding and capability [Respondent 2] and that the entity promotes further studying [Respondents 2, 4 and 6]. The respondents added that the entity investigates the state of biodiversity and will use biodiversity knowledge to develop guidelines, protocols and standard operating procedures *"that guide staff on 'how' to respond"*, for example*, "how to respond to a fire"* and that this a form of capacity building [FG1]. One respondent mentioned that with the impact of climate change, e.g. floods, the *"staff and the organisation is continuing to learn and grow"* through implementing plans and hence, their *"capability is improving and behaviours are beginning to change"* in aid of CCA [Respondent 4]. For example, in the past CapeNature would have plans to fix a road after a flooding event, now *"the entity rather does planning for a road to be able to withstand the impact of the flood"*, and hence the entity is now planning to adapt to climate change [Respondent 4].

From the findings, it was evident that CapeNature's current CCA approaches considered the 'Capacity' theme. Aspects that emerged from the data under this theme included CapeNature building the capability of external and internal stakeholders and the organisation building its competencies in terms of biodiversity management towards CCA.

4.1.9 Infrastructure

This theme emerged organically from the focus groups as part of CapeNature's current CCA approaches. The respondents were of the view that their CCA plans considered infrastructure in the PAs under the management of CapeNature [FG1, FG2]. The respondents expressed this by stating that CapeNature designs infrastructure developments and upgrades to incorporate sustainability and environmental aspects [FG1, FG2]. The respondents mentioned that climate change objectives are entrenched in the way that infrastructure development happens on nature reserves as the entity has developed a set of development principles for sustainability [FG1, FG2, Respondent 2] and subscribes to the principle of *"touching the earth lightly"* [FG1]. This was supported by the State of Conservation Report of 2021 (CapeNature, 2022, p.18), which states that CapeNature considers the *"modelled predicted impacts of climate change in the WC"* in its infrastructure designs and that the entity operates on the principle of *"touching the earth lightly"*.

The respondents indicated that part of their adaptation responses is to consider the location or placement of infrastructure on the nature reserves under their management and they stated that *"our protected area management plans include zonation which takes into account sensitivity, and sensitivity takes into account risk that may arise as a result of climate change"* [FG1] like protecting infrastructure from fire and flooding [Respondents 4 and 5] and hence infrastructure is only allowed in certain zones on PAs [FG2, Respondents 1, 2, 4, 6]. This is confirmed by the document 'An Investment Business Case of the Income Generation Potential of Protected Areas in the WC' (Purnell, 2015, p.50) that states that through suitable environmental sensitivity analysis, suitable areas and locations for eco-tourism activities and developments should be identified on CapeNature properties *"where different forms of activity can take place within acceptable parameters of biodiversity and ecological impacts"*.

The respondents indicated that considering infrastructure in relation to climate change *"is definitely very much on the radar"* [FG1], and various respondents added that towards CapeNature's CCA efforts, the entity's new tourism products are all geared for being off the grid by using sustainable solutions in terms of e.g. water production, sustainable waste treatment options, sustainable energy production, and natural climate control in the buildings [FG1, FG2, Respondents 1, 3 and 4]. For example, using composting toilets, water harvesting technologies, installing eco-pools, going off-grid and installing solar panels,

building out of recycled material and using material that can be easily relocated when necessary [FG1, FG2, Respondents 1, 2, 3, 4, 5 and 6]. The respondents added that another key element was to build on existing footprints [FG2, Respondents 1 and 2] and to retrofit existing infrastructure.

These views were confirmed by the State of Conservation Report of 2021 (CapeNature, 2022, p.18), which indicates that *"climate change and lifecycle sustainability considerations inform the design and operation of CapeNature's tourism facilities on reserves"* where specific features, inter alia, include *"passive heating and cooling designs; waterless toilets; green roofs, rainwater harvesting; recycling old/existing footprints; off-site manufacture; recycling/re-using"* materials and designing and developing *"lightweight buildings, that can be moved/easily decommissioned, made from local and sustainable materials"*. This State of Conservation Report (CapeNature, 2022) also mentions that new infrastructure developments are geared in this fashion while existing infrastructure is being retrofitted. One respondent mentioned that while the older infrastructures are moving in this direction, limited financing is holding the entity back in terms of rolling out these *"green technology approaches"* towards CCA [Respondent 4]. One respondent added that *"management infrastructure, such as roads in nature reserves that staff need to use to manage the nature reserve, are being impacted on negatively"* by climate change and that the organisation has *"the challenge that it cannot afford to repair all the roads"* [Respondent 5]. It was added that the same applies to being able to *"maintain hiking trails"* in the NRs where *"limited financial resources are compromising the entity's ability to secure and maintain these"* [Respondent 5].

From the findings, it was evident that CapeNature's current CCA approaches considered the 'Infrastructure' theme. Aspects that emerged from the data under this theme include considering the location and lifecycle of infrastructure, employing ecologically sustainable infrastructure developments, and deploying green technology in new and existing infrastructure. Maintaining infrastructure such as roads and paths, to implement management functions on nature reserves emerged as well.

4.1.10 Sustainable finance

This theme emerged organically from the focus groups as part of CapeNature's current CCA approaches. The respondents indicated that finances were a major constraint in terms of their CCA plans and *"that it is very difficult to prioritise actions if there is uncertainty with regard*

to budget" [FG1]. The Respondents were of the view that sustainable financing is an important element of CCA, and they explained their rationale by indicating that having the security of budget is critically important for CapeNature to execute its mandate [FG1, Respondents 4 and 5].

The respondents explained that short-term and limited funding has implications that relate directly to the capacity that CapeNature requires to execute its work [FG1, FG2], and they added that because of a lack of sustainable finances, which has a negative impact on other resources such as operational, human resources and capability requirements, CapeNature might find itself in a position where the system has not adapted in time [FG1]. All respondents indicated that the budget is not increasing and that it is not adequate [Respondents 1, 2, 3, 4, 5 and 6], and one of the focus groups expressed this by indicating that linked to the budget, *"it does not fit in terms of what needs to be achieved"* [FG1]. The respondents highlighted that recent budget cuts have had quite a negative impact [Respondents 1 and 2], and various operations such as, inter alia, managing PAs, expanding the conservation estate, monitoring, building capability, and the number of people the organisation is able to employ is not sustainably financed [Respondents 1, 2, 4, 5 and 6]. Five respondents indicated that a limited budget undermines CCA efforts and sustainability at large [Respondents 1, 2, 3, 4 and 6]. The respondents stated that the entity manages the budget that it gets reasonably well, but for the intended outcomes of CCA towards climate resilience to be achieved, a different type of financing mechanism is required [FG1, FG2, Respondents 1, 2 and 3]. The respondents indicated that this is their view of their current reality regarding financing limitations [FG1, FG2].

In support of these sentiments, the WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023, pp.6, 55) indicates that it has noticed, using 2022 as a baseline, *"the acknowledgement of climate change in WC Government strategic documents but no systematic integration of concerns into operational budgets"* and it identifies the need for *"the WC to have better access to national and international climate finance"*. Added to this, the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a) identifies lack of financial sustainability as a key risk and the WC Protected Areas Expansion Strategy 2021-2025 (CapeNature, 2021, p.40) states that the entity continues to implement the strategy but that its internal capacity to drive biodiversity stewardship is beginning to decrease due to budget, and it stresses that *"without an annual increase from Provincial Treasury to*

compensate for inflation, this does put tremendous strain on the current resources available for operations".

To contain the risk of the lack of financial sustainability, the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020) indicates that by 2025, the entity plans to deliver improved financial management and growth in eco-tourism revenue. The CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, p.13) also states that it seeks to achieve economic improvement through, inter alia, *"marketing the unique eco-tourism product offerings that contribute to the financial sustainability of the entity"*. The CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, pp.31, 32) identifies indicators such as a *"Percentage increase in tourism income generated"* with an *"annual target of 7%"* increase, and *"number of new and/or upgrades on existing tourism products"* with an annual target of *"10"* as an attempt to mitigate the risk linked to the lack of financial stability.

From the findings, it was evident that CapeNature's current CCA approaches considered the 'Sustainable finance' theme. Aspects that emerged from the data under this theme are that strategies and plans take climate change into consideration but that adequate resources (i.e. financial, and consequently, human resources, and capability) do not follow suit to enable implementation at a suitable pace towards CCA. The need to contain the risk of lack of sustainable funding emerged, and mechanisms that seek to respond to this were identified.

4.2. EVALUATION OF THE CURRENT CAPENATURE CCA PLANS AGAINST THE KEY CHARACTERISTICS FOR CCA, CHALLENGES AND OPPORTUNITIES

From the findings indicated in Section 4.1 above, it is undoubtedly evidenced that CapeNature's CCA plans considered and are aligned to the key characteristics for CCA that emerged from the literature review (see Table 3 for a summary of the 'Alignment to key characteristics hits and misses for the evaluated CapeNature CCA documents').

The findings of hits and misses, demonstrating where a theme (proposition) was either present or not present in the CapeNature documents that were analysed, are presented in Table 3 below.

Table 3: Alignment to key characteristics hits and misses for the evaluated CapeNature CCA documents

	Predetermined Themes / Propositions									
	Protected Areas and Protected Area Network	**Ecosystem-based adaptation**	**Science-based CCA**	**Participatory**	**Good governance**	**Communication**	**Policy, frameworks and mainstreaming**	**Capacity**	**Infrastructure**	**Sustainable finance**
Document reference										
1-CNSP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2-CNAPP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3-WCBSP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4-WCCCRSIP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5-WCBSAP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-WCPAES	Y	Y	Y	Y	Y	Y	Y	Y	O	Y
7-WCSWMP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8-WCSOB	Y	Y	Y	Y	Y	Y	Y	Y	O	Y
9-WCSOC 2021	Y	Y	Y	Y	Y	O	Y	O	Y	Y
10-WCSOC 2022	Y	Y	Y	Y	Y	Y	Y	Y	O	O
11- IBC	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Legend: Documents 1-11 = documents evaluated, Y = validated proposition, N = disagreed with the proposition, O = not present in document

Sections 4.2.1 to 4.2.10 below compare and contrast the results (i.e. results from the focus groups, individual interviews and document analysis shown under Section 4.1) to make more meaning of the results by synthesising them. This also aided in extracting the challenges and opportunities from CapeNature's documents and interviews where these emerged.

4.2.1 Protected areas and protected area network

While all 11 of CapeNature's CCA documents considered 'Protected areas and protected area network' and while various documents such as the WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023), CapeNature's 5-year Strategic Plan (CapeNature, 2020), CapeNature's Annual Performance Plan (CapeNature, 2023a) and the WC Protected Areas Expansion Strategy (CapeNature, 2021) contain dedicated indicators to manage PAs effectively and to enable and increase the PAs network, the findings from the interviews show that this is not happening sufficiently. From the interviews, it emerged that while CapeNature participated in the development of the WC provincial Climate Change Response Strategy, they were of the view that one of their challenges as an entity is that they *"have a very small part to play in the overarching strategy"* [FG1]. It is plausible that this could be a challenge if the small part that CapeNature plays in a specific area (e.g. alien clearing or fire management on a PA) is not complemented by similar efforts on land outside of the PAs. A fragmented approach could undermine CapeNature's 'Protected areas and protected area network' CCA efforts in the long term.

The participants added that in terms of developing climate resilience, they, for example, have *"a protected area expansion strategy"* [FG1], but their challenge is that while PA expansion is happening, *"it isn't happening fast enough, it should be happening at a faster rate"* [FG1]. Respondents attributed this to financial constraints [FG1, FG2, Respondents 2, 4, 5 and 6]. Respondents added that CapeNature is responsible for effective PA management, which includes general management and restoration and rehabilitation of degraded land via, inter alia, alien clearing, but that this is also hampered by financial constraints [FG1, Respondents 4, 5 and 6]. Therefore, while CapeNature's CCA plans are good from the perspective of considering the need to manage PAs effectively and to expand the conservation estate, the findings show that the 'Protected areas and protected area network' element of CapeNature's CCA plans are hampered due to financial constraints.

From the above data, it becomes clear that the main challenges that emerged from the focus groups, interviews and document analysis include the fragmented implementation of the WCs overarching climate change response strategy, and the reported financial constraints to expand the conservation estate and to implement effective management of PAs. Some opportunities related to improving financing were noted in the study and are discussed in Section 4.2.10 hereafter.

4.2.2 Ecosystem-based adaptation

While all 11 of CapeNature's CCA documents considered 'EBA' and documents such as the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020) and the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a) identified various EBA approaches that the entity employs, such as expanding the PA network, conserving PAs, ecosystems and the associated ecosystem services, and enabling the conservation of and sustainable management of the environment, the participants raised the following issues. *"Alien invasive species in the WC is one of the primary threats to biodiversity and also in terms of exacerbating the impacts of climate change when it comes to fires or droughts"* [Respondent 2]. The FGs explained that CapeNature is responsible for the *"restoration and rehabilitation"* of PAs under its management only [FG1, FG2] and that degraded areas outside of the PAs do not get the necessary attention and that this undermines CCA resilience [FG1]. This thus brings to the fore the challenge of fragmented responses, in practice, to CCA.

Various respondents mentioned financial resources as a *"challenge"* towards EBA [FG1, FG2, Respondents 1, 2, 4, 5 and 6] and that this makes it *"difficult to prioritise actions"* [Respondent 6]. One participant indicated that *"our alien clearing projects for the entire Cape Nature ha*ve *almost come to a standstill because the funding isn't secure"* [Respondent 5]. Similarly, when respondents were asked about their view on sustainable finance (Section 4.2.10), participants indicated that limited resources are channelled to *"high-risk areas"* such as, e.g. *"fire breaks"* and *"fire readiness"* [Respondents 1, 2, 4 and 5] leading to *"critical interventions"* such as *"restoration efforts"* to respond to long term degradation matters not being part of what is deemed as immediate threats [Respondents 1 and 4].

Concerning this theme, it is necessary to highlight that CapeNature's EBA responses include effective PA management and the implementation of the WC Protected Areas Expansion Strategy. This has also been identified as being compromised due to financial constraints

(Section 4.2.1). It should also be recognised that the concern raised by the participants of the limited and protracted attention being paid to degraded areas outside of PAs, and their view that this compromises CCA and resilience has merit as a coordinated integration of efforts is a key element of EBA (IUCN, 2009). Therefore, while there is clear evidence that CapeNature's CCA plans consider EBA, the financial resources challenges and a potentially fragmented approach to EBA by relevant role players (e.g. those responsible for rehabilitation and restoration programmes outside of PAs versus those responsible for these functions inside of PAs) may compromise the entity's EBA efforts towards CCA over the long term.

From the data above, it is evident that the main challenges that emerged from the focus groups, interviews and document analysis include the mentioned financial constraints and the fragmented approach to EBA by relevant role players, thus reinforcing the same challenges that emerged from the previous theme of 'Protected areas and protected area network'. Some opportunities related to improving financing were noted in the study and are discussed in Section 4.2.10 hereafter.

4.2.3 Science-based CCA

While all 11 of CapeNature's CCA documents gave consideration to CCA being 'Science-based', for example, the State of Conservation Reports (CapeNature, 2022; CapeNature, 2023b) and State of Biodiversity Report (Turner, 2017) being informed by the monitoring and surveillance of species and ecosystems, some respondents were of the view that there is room for improvement. This means that, while the respondents were generally of the view that CapeNature's CCA plans are science-based and that various actions that CapeNature does can be tracked back to *"solid science"* [Respondent 1], and is based on *"science that was done by acclaimed researchers in the field of climate"* [Respondent 2], three respondents felt that more could be done in terms of developing science-based plans [Respondents 1, 4 and 6].

Linked to this theme, it should be noted that when respondents were asked about their views on sustainable finance (Section 4.2.10), four respondents highlighted that monitoring over the longer term of CCA implementation efforts is hampered due to limited financing [Respondents 2, 3, 4 and 6]. Therefore, the issue of the lack of sustainable financing poses a major risk, and the fact that the respondents link this risk to having implications on long-term

monitoring suggests that the 'Science-based' component of CapeNature's CCA plans may be compromised over the long term.

Supplementary to the rest of the findings, one respondent added that CapeNature's CCA plans should also draw on *"social science"* [Respondent 4]. This notion may be worthwhile exploring as pointed social sciences interventions, which potentially have greater potential to influence people's behaviour positively towards Climate Change, could be a vital link in effective CCA responses over the long term. Also, worthwhile reiterating is that the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a, p.15) highlighted that, in aid of garnering scientific knowledge, it practices "*collaborative research"* and employs *"citizen science to maximise"* its *"biodiversity capability"*. Therefore, upscaling this is an opportunity that CapeNature can exploit in an attempt to mitigate the potential risks pertaining to long-term monitoring raised by the respondents.

From the data above, it becomes apparent that the main challenges that emerged from the focus groups, interviews and document analysis include the reported financial constraints and an undermined long-term monitoring ability [due to financial constraints]. Opportunities that emerged from the data to enhance the science-based approach include drawing from social science to improve CCA and for upscaling collaborative research. Some opportunities related to improving financing were noted in the study and are discussed in Section 4.2.10 hereafter.

4.2.4 Participatory

While all 11 of CapeNature's CCA documents considered 'Participatory' approaches through documents such as the WC Biodiversity Spatial Plan (Pool-Stanvliet et al., 2017) and the WC Protected Areas Expansion Strategy 2021-2025 (CapeNature, 2021), the respondents did raise a few issues as follows.

The respondents cautioned that from their perspective, all CCA plans do not necessarily require input from the broader public and, depending on the nature of the document or plan, the relevant stakeholders should be identified to develop specific plans [FG1, FG2, Respondent 6]. The respondents cautioned that a *"careful balance"* is required when employing participatory approaches to CCA planning, and they were of the view that careful consideration should be given to *"what plans should be developed in a participatory approach, and at what stage of the development of specific plans participatory approaches*

should be employed as there is a risk of either too little participation in some instances and unduly protracted processes in other instances" [FG1]. The respondents speculated that, in some instances, the entity may be of the view that it is doing consultation but may be doing communication or information sharing [FG1, Respondent 6].

The respondents were also of the view that in certain instances, the intention of the entity to enable participation by stakeholders may not be supported by an approach that allows for people to be involved in the participation process and that there is room for improvement [FG1, FG2]. Therefore, while various CapeNature CCA plans consider and demonstrate 'Participation', in some instances, there appears to be uncertainty regarding what plans require participation, to what degree this is required, and what approaches to use when. This means that there may be some finer nuances that the entity needs to pay attention to concerning the theme of 'Participatory' approaches.

Linked to the data above, it becomes evident that the main challenges that emerged from the focus groups, interviews, and document analysis include a degree of ambiguity regarding when, what plans, and which stakeholders should be involved in the development of different plans. From this data, it also emerged that there is a challenge of ambiguity regarding consultation versus information sharing and uncertainty on suitable and effective approaches/mechanisms to enable stakeholders to engage authentically in the participatory processes.

4.2.5 Good governance

While all 11 of CapeNature's CCA documents considered 'Good governance' through various documents such as the CapeNature Annual Performance Plan 2023-24 (CapeNature, 2023a) that seeks to ensure good governance during the execution of work, and while this plan also identifies the challenge of financial or economic sustainability and identifies risk responses, the respondents stress this risk and its implications as follows. Linked to the risk pertaining to economic sustainability, two respondents highlighted that while there are policies, guidelines, and good decision-making ability in the entity in terms of what needs to be done towards CCA, there is a challenge to being able to fully implement those decisions due to limited resources [Respondents 5 and 6]. This was qualified by indicating that the available financial resources are not aligned with the policies and plans in terms of implementation [Respondents 5 and 6].

As part of their reflections on the sustainable finance theme (Section 4.2.10), other respondents raised the same concern that the CCA plans call for implementation and monitoring thereof, but limited financing is hampering the ability to both *"implement and monitor"* the CCA efforts [Respondents 2, 3, 4 and 6]. This may thus be compromising good governance, as a key element of good governance includes the need to translate plans into implementation and to monitor the projects or programmes being implemented.

Added to this, the WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023) explicitly points out that governance structures need to be sufficiently capacitated, meaning that this may require an element of training that may have financial implications. Respondents have, however, pointed out that while there are opportunities to leverage resources and while there is potential for sustainable financing, they were of the view that CapeNature lacks the capacity to harness the financing opportunities [Respondents 1, 2, 3 and 4] (Section 4.2.10). This is supported by the document 'An Investment Business Case of the Income Generation Potential of Protected Areas in the WC' (Purnell, 2015), which indicates that the organisation seems to lack the knowledge and skills to capitalise on sustainable financing opportunities. In relation to the aforementioned, it must be recognised that the breadth of the CCA elements that CapeNature is concerned with requires numerous governance structures to be in place, functional and capacitated as climate change ensues. It is, therefore, evident that while the entity seeks to maintain the various aspects of good governance, due to financial constraints and capacity challenges to facilitate sustainable financing, the organisation may find it difficult to truly enable and maintain the requisite capacity for good governance across all its relevant structures and the associated operational mandates required to be executed under the auspices of these structures.

From the above data, it becomes clear that the main challenges that emerged from the focus groups, interviews and document analysis include the stated financial constraints, capacity constraints to leverage sustainable financing, and that various governance structures' functionality and ability to operate may be at risk due to financial constraints to enable training and capacity building. Some opportunities to sustain 'Good governance' were identified, and these include resource leveraging and developing or sourcing the capability to capitalise on sustainable financing opportunities or options. Some opportunities related to improving financing were noted in the study and are discussed in Section 4.2.10 hereafter.

4.2.6 Communication

While 10 of CapeNature's CCA documents considered 'Communication' through various documents, such as the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, p.12) which mentions that the entity does environmental education and awareness initiatives through the *"promotion of biodiversity and climate change awareness"*, the respondents raised the following. The respondents indicated that there is environmental education and awareness and that the plans exist [Respondents 2 and 4] but that it does not make a strong link to climate change [Respondents 1, 3, 4, 5 and 6]. The respondents were of the view that the impact of climate change needs to be communicated more explicitly to communities, that the language used must be easily understandable and palatable for the public at large and that ideas on how the communities can respond to CCA need to be communicated more clearly [Respondents 3, 4, 5 and 6]. In terms of internal communication, three respondents were of the view that communication about climate change and how CapeNature staff at large can respond to this can improve as well [Respondents 3, 4 and 6]. The respondents were of the general view that more emphasis should be placed on communicating climate change impacts and CCA matters to the public [Respondents 1, 3, 4, 5 and 6].

One respondent raised the issue of communication being *"tricky, because how do you gauge someone's receipt of a communicated plan"* [Respondent 4]. This is supported by the State of Biodiversity Report (Turner, 2017), which reiterated that CapeNature contributes to environmental awareness initiatives that help to promote raising public awareness but conceded that it is difficult to gauge public awareness without formal studies being undertaken to evaluate and measure it, and to assess its efficacy in changing the behaviour of people and them becoming more environmentally conscious.

However, whilst reflecting on the theme of capacity (Section 4.1.8) one respondent indicated that they have noticed an improvement in how the public responds because the intended outcomes of interventions with the public are beginning to feature [Respondent 4]. Nevertheless, five respondents indicated that there is room for improvement in this regard [Respondents 1, 3, 4, 5 and 6]. This thus means that the organisation may need to take stock of how it is communicating CCA matters with stakeholders and explore ways to determine if their current communication approaches are yielding the desired impact.

Therefore, while CapeNature's CCA plans are good from the perspective of considering the need to employ 'Communication' in its CCA plans, there is a need to pay attention to the theme of 'Communication'.

From the data above, it is apparent that the data shows that the main challenges that emerged from the focus groups, interviews and document analysis include the need to ensure that there is a stronger link and emphasis on climate change when environmental education and awareness activities are conducted, ensuring that the information being communicated is understood by the intended audience (e.g. public and internal staff), and the possible need to measure if communication interventions have the desired impact as there is uncertainty in this regard.

4.2.7 Policy, frameworks and mainstreaming

While all 11 of CapeNature's CCA documents considered 'Policy, frameworks and mainstreaming' through various documents such as the WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023, p.6) that provides the *"overriding policy direction for achieving climate resilient objectives"* and advocates for climate change considerations to be fully integrated across the WC, the following concerns emerged from the interviews. The respondents raised the challenge of some responses to climate change, such as solar farms, being placed in areas that are important for CCA [FG1], meaning that some of these interventions may be fragmented and not aligned to or integrated within the larger CCA frameworks that the entity is attempting to plan for. A similar sentiment was raised by respondents when they were reflecting on EBA (Section 4.2.2), where related CCA efforts inside and outside of PAs were not aligned. Therefore, while CapeNature's CCA plans do consider the need for and demonstrate 'Mainstreaming', the entity may need to pay dedicated attention to how it plans for and implements 'Mainstreaming' in future, and if and how this element could better link to other elements of CapeNature's CCA plans, i.e. 'Communication', 'Participation' and 'Capacity' initiatives and interventions. The respondents, however, reflected on the placement of CapeNature as a Provincial Government entity and how it can better influence developments.

The data above demonstrates that the main challenge that emerged from the focus groups, interviews and document analysis include continued fragmented approaches to climate change responses that undermine coordinated, effective and efficient CCA. From this data,

opportunities that emerged to enhance 'Policy, frameworks and mainstreaming' include CapeNature capitalising on the entity's position within Government, i.e. continuing and actively lobbying for and guiding appropriate development through necessary means in partnership with the Department of Environmental Affairs and Development Planning (external focus). Enhancing CapeNature-based CCA approaches to improve impact, i.e. increased synergy between 'Mainstreaming', 'Communication', 'Participatory' and 'Capacity' CCA initiatives (internal focus), also emerged as an opportunity.

4.2.8 Capacity

While 10 of CapeNature's CCA documents considered 'Capacity' through various documents such as the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, pp.13, 21) that states that it will continue to enable *"reflexive"* or adaptive *"capabilities"* and implement *"learning"* and *"development"* programmes for staff, there appears to be challenges and contradictions in this regard. This is because these interventions require financial resources and, as an example, documents such as the WC Protected Areas Expansion Strategy 2021-2025 (CapeNature, 2021, p.46) indicate that *"CapeNature currently has limited budgetary provision and operational capacity for implementing the WC Protected Areas Expansion Strategy"*. Added to this, the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, p.21) indicates the risk of an *"inability to maintain human resources and capacity"* and the desire to *"implement programmes to provide opportunities and facilitate learning and development"*. However, the document 'An Investment Business Case of the Income Generation Potential of Protected Areas in the WC' (Purnell, 2015) states that a key challenge is that the organisation does not appear to have the requisite business knowledge and skills among CapeNature employees to realise sustainable financing. This means that the intentions of the CapeNature 5-year Strategic Plan 2020-2025 may prove to be difficult due to financial constraints and limited ability to explore and realise sustainable financing.

The respondents also raised the challenges associated with a budget under various other themes, i.e. (financial constraints were identified as a challenge under 'Protected areas and protected area network', 'Science-based', 'EBA' and 'Good governance'). It should be noted that the document 'An Investment Business Case of the Income Generation Potential of Protected Areas in the WC' (Purnell, 2015) has advised that CapeNature creates a dedicated sustainable financing unit by appointing appropriately skilled and experienced staff to drive income generation initiatives and it should also be noted that, in line with this, respondents

were of the view that the entity should establish a dedicated sustainable financing unit so that it receives focused attention [FG2, Respondent 1]. Therefore, the matter of 'Capacity' in CapeNature's CCA plans cannot be divorced from the entity's sustainable financing imperatives.

Linked to 'Capacity', where the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020, pp.13, 21) indicates that the entity will continue to enable *"reflexive"* or adaptive *"capabilities"* and implement *"learning"* and *"development"* programmes for staff, it should be noted that while respondents confirmed that the entity creates studying and learning opportunities for staff [Respondents 2, 4 and 6], and explained that the staff and the organisation are continuing to learn and grow [Respondent 4], the respondents indicated that there is room for improvement in the *"proactive space"* of capacitating staff and for the CCA capability of staff to be enhanced [FG1]. Here, respondents referred to a need for more training for staff in order for the 'thinking' about climate change to be more entrenched in staff [FG1, Respondent 5] and for the climate change adaptation *"capability"* of staff to be enhanced [FG1]. Added to this, respondents were of the view that linked to capacity building for the general citizen or the broader public, the organisation is at the point where it is sharing information around climate change but not really building capacity to respond to climate change [Respondents 1 and 5]. The respondents attributed this to resource capacity constraints and indicated that they have to focus on and build the capability of specific groups such as municipalities, town planners and landowners involved in stewardship [Respondents 1, 3 and 6].

Therefore, while CapeNature's CCA plans consider 'Capacity', the issue of financial constraints poses a risk to CapeNature's CCA plans in the long term in relation to the need for improved CCA capability (for both internal and external stakeholders), and the need to be able to retain and enhance human capacity or resources.

The data above makes it clear that the main challenges that emerged from the focus groups, interviews and document analysis include the reported financial constraints, loss of human resources, and difficulty in developing and/or enhancing CCA capability/ability. To improve 'Capacity', opportunities identified from the data include developing (i.e. establishing an internal sustainable financing unit) and sourcing the capability (internal or external) to

capitalise on sustainable financing options. Some opportunities related to improving financing were noted in the study and are discussed in Section 4.2.10 hereafter.

4.2.9 Infrastructure

Eight of CapeNature's CCA documents considered 'Infrastructure' through various documents such as the document, 'An Investment Business Case of the Income Generation Potential of Protected Areas in the WC' (Purnell, 2015) that guided that eco-tourism developments should minimise impact on the environment and be placed in suitable areas that can tolerate impacts within acceptable parameters. The respondents confirmed that there is progress in this regard through interventions where infrastructure is designed to *"touch the earth lightly"* [FG1] and is thus placed in suitable areas [FG2, Respondents 1, 2, 4 and 6] or built on existing footprints [FG2, Respondents 1 and 2], and that various sustainable solutions for buildings are being used [FG1, FG2, Respondents 1, 2, 3, 4, 5 and 6].

However, it should be noted that one respondent raised the issue that limited financing is hampering the entity from retrofitting existing infrastructure appropriately and rolling out green technologies in aid of CCA [Respondent 4], and another respondent highlighted that the issue of limited funding is compromising the entity's ability to maintain management infrastructure such as roads that are needed to manage nature reserves and recreational infrastructure such as hiking trails [Respondent 5]. Therefore, while CapeNature's CCA plans consider 'Infrastructure', the entity's intention to implement its CCA plans within a reasonable period may be compromised. Critical to note is that severely compromised infrastructure, such as management roads and hiking trails in nature reserves, will also undermine various other CapeNature CCA plans, such as PA management and Science-based imperatives, as these functions cannot be appropriately actioned if staff cannot access specific areas in the PAs to execute activities that support these plans. In addition, compromised recreational facilities such as hiking trails can also undermine the entity's desire to maintain and improve revenue generation if these infrastructure assets are not maintained.

From the above data, it is apparent that the main challenge that emerged from the focus groups, interviews and document analysis included financial constraints and, hence, an inability to implement CCA infrastructure plans [e.g. retrofit, relocate or rebuild existing structures], compromised infrastructure (e.g. management roads) thus undermining other CCA plans (e.g. effective management of PAs or research to inform science-based CCA

management responses), and compromised recreational infrastructure (e.g. hiking trails) undermining revenue maintenance and or revenue enhancement endeavours. Some opportunities related to improving financing were noted in the study and are discussed in Section 4.2.10 hereafter.

4.2.10 Sustainable finance

Nine of CapeNature's CCA documents considered 'Sustainable finance'. The WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023) conceded that various documents acknowledged climate change, but that climate change concerns did not find suitable expression in operational budgets. In line with this, the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020) identified the lack of sustainable funding as a key risk, and the WC Protected Areas Expansion Strategy 2021-2025 (CapeNature, 2021) indicated that the financial allocations that the entity receives from Provincial Treasury are not aligned to inflation. The respondents supported these views by indicating that the entity is experiencing budget cuts [Respondents 1 and 2], that the limited financial resources undermine the entity's ability to execute necessary operations and that this approach is not sustainable [Respondents 1, 2, 4, 5 and 6]. The respondents were of the view that a different financing mechanism is required [FG1, FG2, Respondents 1, 2 and 3].

It should be noted that while the CapeNature 5-year Strategic Plan 2020-2025 (CapeNature, 2020) identifies various mechanisms such as growing eco-tourism revenue and creating new/upgrading tourism offerings to increase tourism revenue towards assisting in addressing the sustainable financing gaps, the document 'An Investment Business Case of the Income Generation Potential of Protected Areas in the WC' (Purnell, 2015) expands on opportunities that include investment and commercial opportunities, grants and payment for ecosystem services. In addition, the WC Draft Provincial Biodiversity Strategy and Action Plan 2020-2030 (DEA&DP, 2023) identifies options such as green bonds. However, in terms of CapeNature's ability to capitalise on such sustainable financing options, the document 'An Investment Business Case of the Income Generation Potential of Protected Areas in the WC' and the respondents are of the view that the entity lacks this capability (see Section 4.2.8). This document and the respondents did, however, suggest the establishment of a 'sustainable financing unit' (see Section 4.2.8).

Important to note that while the respondents link limited finances as having a negative impact on various aspects of the entity, they also raise a challenge linked to how they currently leverage financial resources [FG1, Respondents 2 and 4]. This was explained by the respondents mentioning that when some funding is leveraged for CCA efforts, an already thin-stretched staff complement is responsible for finer planning and implementation, which is challenging. They thus suggested that their CCA plans should not only consider leveraging sustainable financing for operations. However, they should also cater for obtaining additional human resources for project roll-out [Respondents 2 and 4]. One respondent also raised the concern that, within the sustainable financing options discussions, there are talks around CCA funding being availed in the form of loans, and they cautioned that it would become a hazard to CCA if funding that conservation agencies may want to apply for does not come cost-free (Respondent 2).

Considering these financial realities, it should be noted that, towards responding to this challenge, the WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023, pp.53, 55, 58) identifies the Department of Environmental Affairs and Development Planning's climate change and sustainability divisions and the WC Provincial Treasury to take actions, amongst others, as follows, *"capacitate and support applications for climate finance; identify opportunities for collaborative response action and access to climate finance; ensure capacity and technical expertise within WC Government to assist with proposal writing"* and *"utilise innovative finance mechanisms to advance adaptation"*. In addition to this, the WC Draft Provincial Biodiversity Strategy and Action Plan 2020-2030 (DEA&DP, 2023, pp.46, 47, 58) identifies actions specifically for CapeNature such as, inter alia, *"ongoing implementation and regular revision of the CapeNature resource mobilisation/investment strategy; develop formalised mechanisms which incorporate the value of ecosystem goods and services into biodiversity planning e.g. green bonds, economic policy instruments and the Biodiversity Finance Initiative; Increase in Tourism generated revenue year on year"* and *"completion of infrastructure upgrade and maintenance projects on an annual basis"*.

The respondents also viewed that CCA planning and management in the conservation sector should enable active collaboration to ensure that the limited financial resources available for CCA are used efficiently and effectively [Respondents 2, 3 and 4].

Therefore, while CapeNature's CCA plans have considered sustainable financing, the current known and experienced reality expressed in the findings shows that the plans are not appropriately nor sustainably financed. It also appears that the lack of sustainable financing and the consequent impact across various other important aspects of CCA poses the greatest risk to CapeNature's ability to execute, monitor and evaluate their CCA plans. As CapeNature's CCA plans are not sustainably financed, this, ironically, has a negative effect on the entity's capacity and ability to enable sustainable financing.

The current lack of adequate funding or sustainable funding for CapeNature's CCA plans poses a risk to the entity's ability to implement the plans and achieve the desired CCA impact over the long term. The implications of this may even ensue sooner if the entity's financial allocations are not aligned with inflation, if budget cuts continue and should the entity not be able to garner the skills, support and capability to enable sustainable financing.

From the above data, it becomes clear that the main challenges that emerged from the focus groups, interviews and document analysis include the reported financial constraints and lack of sustainable financing, capacity constraints [human resource availability and CCA capability] due to financial constraints, operational tools and equipment resource constraints, and challenges in prioritising critical tasks above the others.

Towards enabling sustainable finance, opportunities that emerged from the data include the establishment of a sustainable financing unit, sourcing the capability (internal or external) to capitalise on sustainable financing opportunities or options and leveraging CCA financing that allows for additional human resources to assist with finer planning and project roll-out to increase chances of success. Added to this, the opportunity exists to actively engage the Provincial Treasury and Department of Environmental Affairs and Development Planning to assist CapeNature in closing funding gaps through, e.g. these organisations supporting applications for climate finance, identifying opportunities for collaborative response action and access to climate finance, ensuring expertise to assist with proposal writing, and using innovative financing mechanisms towards CCA as per the WC Climate Change Response Strategy Implementation Plan (Brown et al., 2023).

4.3 SUMMARY OF KEY CHALLENGES AND OPPORTUNITIES

Below is a summary of the key challenges and opportunities that emerged from the findings.

4.3.1 Key challenges

From the findings, it is evident that the fundamental challenge to CapeNature's CCA plans is the lack of sustainable financing. This, consequently, exacerbates challenges such as capacity, capability or ability constraints. The issues of limited financing and capacity hamper other key CCA elements, such as effective PA management and facilitating PA networks. The implementation of EBA and enabling science-based decision-making and approaches are also hindered by limited financing and capacity. In addition, other impaired key elements include CapeNature's plans for continued good governance capability and the empowerment of relevant governance structures across the spectrum of CapeNature's mandate. The capacity to enable infrastructure-related CCA necessities is compromised, and the continued fragmented climate change responses, which undermine coordinated, effective, and efficient CCA, also emerged as a challenge.

Additional challenges that emerged pertain to communicating climate change matters in a manner that is understood by the intended audience (e.g. the broader public) and measuring whether communication and information-sharing initiatives have the desired impact. Added to this, linked to participation, the challenge of what plans should be consulted, who should be consulted, and what the best suitable and effective approaches/mechanisms to enable authentic involvement in the participation processes by people are, came to the fore as well.

4.3.2 Key opportunities

The findings brought to the fore key opportunities such as improving resource leveraging capability by establishing an internal sustainable financing unit in the entity and/or sourcing the capability externally to capitalise on sustainable financing opportunities or options. External opportunities include actively engaging the Provincial Treasury and Department of Environmental Affairs and Development Planning to assist CapeNature in closing funding gaps through various options e.g. assistance with climate finance applications and innovative financing mechanisms. Linked to resource leveraging the organisation can leverage CCA financing, which allows for additional human resources to be employed to assist with finer planning and project roll-out.

Regarding the fragmented approach to climate responses on the ground, the opportunity to capitalise on the entity's position within Government as a Provincial entity emerged, e.g. actively lobbying for coordinated action and guiding appropriate development through necessary means in partnership with the Department of Environmental Affairs and Development Planning.

Regarding challenges raised about 'Science-based', 'Communication' and 'Participatory' approaches, opportunities that emerged from the findings include upscaling collaborative research and drawing from social science to improve CCA responses and influence people's behaviour positively. In addition, the opportunity to explore and enhance synergy between CapeNature's mainstreaming, communication, participatory and capacity initiatives to improve their impact also emerged.

CHAPTER 5: DISCUSSION AND RECOMMENDATIONS

This chapter discusses the findings, challenges, and opportunities and explores recommendations for improving CapeNature's CCA plans.

Before drawing conclusions, this chapter critically discusses the main research findings from the interviews, focus groups and document analysis (as presented and discussed in Chapter 4).

In aid of this, the content of the current CapeNature CCA approaches is briefly highlighted in order to compare and contrast and assess and discuss alignment to the literature. Challenges and opportunities are discussed as well. This approach allowed for exploring and identifying recommendations to improve CapeNature's CCA plans.

5.1 PROTECTED AREAS AND PROTECTED AREA NETWORK

From the findings discussed in Chapter 4, it was evident that CapeNature's CCA approaches considered the protected areas and protected area networks as part of its CCA plans.

In Germany, the federal state of Brandenburg, realised that biodiversity was facing pressures such as habitat degradation and habitat loss and that human-induced climate change was exacerbating the situation (Reyer, Bachinger, Bloch, Hattermann, Ibisch, Kreft, Lasch, Lucht, Nowicki, Spathelf, Stock and Welp, 2012). This is quite similar to CapeNature's situation in terms of the pressures that the entity faces linked to climate change. In Germany, they thus sought approaches towards CCA and identified the management of existing PAs as a suitable approach (Reyer et al., 2012).

Likewise, CapeNature employs the management of existing PAs as a suitable approach to CCA. Countries such as Germany, the United Kingdom, Australia and Europe also identified nature conservation as an integral part of CCA through enhancing the management of existing PAs, developing and maintaining PA networks for biodiversity resilience towards CCA and resilience to the impacts of climate change (Sutherland et al., 2010 cited in Burch, Berry and Sanders, 2014; Australian Capital Territory Government, 2013; EUROPARC, 2023) and Germany specifically linked this CCA approach as a means to protect nature,

people and infrastructure (Reyer et al., 2012). CapeNature, too, uses CCA approaches of improving management effectiveness of its existing PAs, increasing the conservation estate and creating a PA network to enhance connectivity and build climate resilience for nature, people and protecting infrastructure in its PAs. Therefore, CapeNature's approaches generally compare well to the approaches used by other countries.

However, the fragmented approach in CCA implementation planning at a provincial scale, which emerged as a challenge for CapeNature, requires improvement in terms of alignment with suggested approaches from the literature. This somewhat disjointed planning (in terms of implementation) is also not unique to CapeNature, with Germany and the United Kingdom noting similar challenges. Germany (Reyer et al., 2012) and the United Kingdom (Burch et al., 2014) raised the challenge of fragmented approaches and indicated that synergies towards CCA can be created through mainstreaming scientific knowledge into policy-making processes (Reyer et al., 2012; Burch et al., 2014). While CapeNature is mainstreaming scientific knowledge into policy-making processes (as discussed in Section 4.2.7), the federal state of Brandenburg in Germany pointed out that the issue of fragmentation can also be responded to by engaging local people and stakeholder groups to integrate local knowledge and new perspectives and harness collective intelligence towards CCA (Reyer et al., 2012). This approach can create avenues for linking lay knowledge and scientific knowledge, and combining and integrating communication tools and participation to truly act as a means for collective action in areas that have specifically been pointed out as the most sensitive and exposed areas, in order to steer collective pointed intervention to specific areas (Reyer et al., 2012). Thus, CapeNature should consider including this approach in their CCA approaches so that the entity's CCA efforts linked to PAs management and expansion are supported by complementary CCA efforts directly adjacent to and outside of PAs.

The challenge of financial constraints is discussed under Section 5.10 (Sustainable finance).

5.2 ECOSYSTEM-BASED ADAPTATION

From the findings discussed in Chapter 4, it was evident that CapeNature's CCA approaches considered the EBA or nature-based solutions as part of its CCA plans.

In the United States (US) Southwest, the impact of climate change on ecosystems and people became widespread in the form of, inter alia, severe wildfires and disruptions to aquatic systems, which led to major changes in the composition and functioning of ecosystems and the undermining of much-needed ecosystem services required for nature and people to survive (McCarthy, 2012). CapeNature also identified similar climate change-related disruptions, such as major fires, water scarcity, and floods, and considers these severe disruptions to be an undermining factor for ecosystem functioning. The US (McCarthy, 2012) and Brazil (Scarano, 2017) employed EBA as part of their CCA strategy towards climate resilience to reduce vulnerability and the adverse impacts of climate change and enable the continued provision of ecosystem services for nature and people. These countries' efforts, for example, included restoration and rehabilitation efforts, fire management to protect nature and manage nature towards building resilience (McCarthy, 2012; Scarano, 2017), and protecting property from wildfires (McCarthy, 2012). CapeNature's EBA CCA approaches, such as fire management, alien clearing to reduce fuel load for fires, restoration and rehabilitation programmes, and protecting infrastructure from fire and flooding, align well with other countries like the US and Brazil.

Germany (Reyer et al., 2012) and Australia (Australian Capital Territory (ACT) Government, 2013) identified EBA CCA approaches such as the better management of PAs and facilitating well-connected PAs to enhance the connectivity between ecosystems to maintain ecosystem functioning. Correspondingly, CapeNature's EBA CCA approaches include better or improved management effectiveness of the PAs under their management and creating connectivity between ecosystems to maintain ecological functioning for protecting nature and people from the impacts of climate change.

However, as per the findings, the issues of a fragmented approach to EBA by relevant role players emerged as a challenge for CapeNature. Similarly, Brazil identified a lack of integrated effort or fragmentation in terms of EBA approaches towards CCA as a challenge as well (Scarano, 2017). In response to this, Brazil advised that conservation science should set geographic conservation priorities in order for specific priorities to be applied in specific areas when deploying EBA strategies (Scarano, 2017). It should be noted that in terms of prioritising specific areas for deploying EBA strategies, this suggestion emanating from Brazil is very similar to the response by the federal state of Brandenburg in Germany of steering collective pointed intervention to specific areas to overcome the challenge of a

fragmented approach linked to the 'Protected areas and protected area network' CCA approach. This similarity makes sense as PA management and creating PA networks are some of the actions contained in EBA towards CCA. This thus reinforces the recommendation that, amidst various geographical areas that require attention towards CCA, CapeNature can consider pointing out the most sensitive and exposed areas to steer collective pointed intervention to specific areas (Reyer et al., 2012; Scarano, 2017).

As per the findings, financial constraints were also raised as a challenge to CapeNature's CCA EBA approach. The challenge of financial constraints is discussed under Section 5.10 (Sustainable finance).

5.3 SCIENCE-BASED CCA

From the findings discussed in Chapter 4, it was evident that CapeNature's CCA approaches considered the science-based approach as part of its CCA plans.

Various institutions in the US, such as the School of Forestry and Environmental Studies, the Nature Conservancy Conservation Science Group, Florida Natural Areas Inventory, California Landscape Conservation Cooperative, the Conservation Biology Institute and the Washington Department of Fish and Wildlife indicate that it is critical for CCA approaches to be science-based to inform land-use planning and development (Schmitz, Lawler, Beier, Groves, Knight, Boyce, Bulluck, Johnston, Klein, Muller, Pierce, Singleton, Strittholt, Theobald, Trombulak and Trainor, 2015). Equally, CapeNature expressed that a science-based approach to CCA is critical and that they, too, employ this approach to, amongst others, inform land-use planning and appropriate development. These various afore-mentioned institutions in the US (Schmitz et al., 2015) and other countries like Europe (EUROPARC, 2023) and Australia (ACT Government, 2013) assert that science-based approaches to CCA should include conservation planning that, amongst others, incorporate research that entails mapping species occurrences and factors related to ecological integrity, undertaking vulnerability assessments, employing modelling and scenario planning to inform what areas will remain stable to allow for the persistence of biodiversity amidst climate change, which areas need to be maintained, protected or restored, and which areas should be established to enable ecological connectivity that allows e.g. species movement and the maintenance of ecosystem functioning towards resilience. In relation to the science-based

approach, CapeNature's approach aligns well with the suggested approaches from the literature as it, amongst others, includes monitoring and surveillance of species and ecosystems, considers vulnerabilities of ecosystems and is based on modelling and scenario planning to inform suitable science-based recommendations and approaches to guide appropriate land use and spatial planning, PA management and important areas for connectivity across the WC.

However, CapeNature raised financial constraints and the subsequent undermining of long-term monitoring as a challenge. Similarly, the ACT Government (2013) raised the issue that CCA approaches, especially implementation actions, are dependent on the availability of funding, and it identified the need to secure funding for science-based CCA planning and implementation in response to this challenge (see Section 5.10, sustainable finance, for more information). In addition to raising the challenge and the need to secure funding, the ACT Government (2013) identified opportunities to support science-based approaches, such as enhancing and promoting the use of citizen science by actively drawing from established groups and individuals willing to volunteer their skills and experience and enhancing key partnerships across government, community, private sector and research organisations. While CapeNature already employs these approaches, the literature suggests that there is a need to enhance these opportunities, and hence, it is recommended that CapeNature consider this.

From the findings, CapeNature raised the possibility of drawing from social science to improve CCA responses. Brazil supports this notion by indicating that 'normal' conservation science will need to start to frame the links between ecosystems and society through interdisciplinary collaboration with, for example, the social sciences to develop models that link conservation with society and social change (Dangles et al., 2016, cited in Scarano, 2017). Therefore, collaboration with social sciences is a plausible opportunity to improve CCA responses that can support positive social and behavioural changes in society towards CCA for climate resilience, and hence, this is suggested to CapeNature as a recommendation for further exploration.

5.4 PARTICIPATORY

From the findings discussed in Chapter 4, it was evident that CapeNature's CCA approaches considered the participatory approach as part of its CCA plans.

Romania (Stringer, Scrieciu and Reed, 2009), Germany (Reyer et al., 2012), Europe (EUROPARC, 2023) and Australia (ACT Government, 2013) employed participatory approaches to involve stakeholders towards addressing complex problems such as climate change through CCA. Similarly, CapeNature employed participatory approaches as part of its CCA approaches when, for example, developing the WC Biodiversity Spatial Plan through a collaborative initiative with relevant national and provincial government organisations and when the entity developed the WC Protected Areas Expansion Strategy through participation strategies that allowed for the document to be contributed to and developed by stakeholders and partners ranging from national, provincial and local government authorities to communities and landowners and NGOs.

CapeNature did, however, raise the challenges of ambiguity regarding when and what plans to involve stakeholders in, ambiguity regarding consultation versus information sharing, and uncertainty regarding mechanisms to enable authentic involvement in the participation processes by people. This is not unique to CapeNature, as Romania pointed out that it initially struggled with the notion of a participatory approach (Stringer et al., 2009). To deal with this challenge, Romania, in its Romsilva Sadova forest district, adopted a stakeholder participatory approach to address problems such as biodiversity loss, desertification and climate change by establishing structures such as the Association of Local Forest Owners to enable a participatory land rehabilitation project, investigating and considering local perspectives on degraded land and their views on the steps that can be taken towards land rehabilitation (Stringer et al., 2009). Due to the extent of the project and the number of stakeholders, the Romanian Government used multiple approaches to enable authentic participation through collaborating with local institutions, involving specialists, local political leadership, scientists, NGOs and the local forest owners to develop cooperation between the stakeholders and enable an element of a bottom-up nature of involvement and decision-making (Stringer et al., 2009). This culminated in the development of a plan, owned by all, that indicated the actions required to rehabilitate and reforest degraded areas, and as a subsequence of the participatory process, funding applications to implement the plan proved to be successful (Stringer et al., 2009). In contrast, the approach that CapeNature takes to the complex problem of climate change is not entirely a participatory approach that enables a bottom-up nature of involvement and decision-making towards CCA by all levels of stakeholders, which is likely due to the evident lack of financial (and subsequent capacity and capability resources) that the organisation face. However, the case of Romania shows that a

genuine bottom-up participatory approach to CCA is possible and that while there is not necessarily a one-size-fits-all participatory approach, collaborative approaches with various stakeholders and employing the most appropriate participatory mechanisms for a specific challenge or project can be jointly explored and activated by various parties concerned.

Therefore, it is recommended that CapeNature considers engaging NGOs, relevant specialists and communities to aid in forming appropriate participatory mechanisms for the entity's specific CCA plans and interventions to enable greater shared ownership and joint responsibility for CCA.

5.5 GOOD GOVERNANCE

From the findings discussed in Chapter 4, it was evident that CapeNature's CCA approaches considered the 'Good governance' approach as part of its CCA plans.

Europe (EUROPARC, 2023) indicates that good governance, which includes shared governance, is vital in climate planning and climate action for CCA. The Nottawasaga Valley Conservation Authority in Canada adds that stakeholders must be empowered with knowledge so that they can make informed decisions that contribute to building climate change resilience (Nottawasaga Valley Conservation Authority, 2022) and various conservation institutions in the US indicate that as part of governance, the monitoring and evaluating of the performance of adaptation approaches is vital (Lawler et al., 2010, cited in Schmitz et al., 2015). Comparable to these views, using the WC Protected Areas Expansion Strategy as an example, CapeNature's CCA approaches consider shared governance, cooperative governance, co-management and effective oversight through the WC Biodiversity Stewardship Reference Group and the landowners who partake in the planning and implementation of this strategy on private land, and as such, CapeNature's governance approaches are reasonably aligned to the suggested approaches from the literature.

However, while CapeNature supports and calls for governance that includes relevant stakeholders in decision-making and highlights the importance of shared responsibility and co-governance processes that are inclusive, the CapeNature Annual Performance Plan raises the issue of the lack of economic sustainability, and the respondents raised the issue of financial constraints as a barrier to the continued planning, implementation and monitoring of

its CCA programmes. Likewise, Brazil (Scarano, 2017) and England (Burch et al., 2014) raise the point that globally, there are challenges linked to climate change governance, which, inter alia, include financing uncertainty. England (Burch et al., 2014), therefore, suggests continuing to co-develop and communicate clear policies articulating the priority status and, hence, the need for CCA so that it remains a priority. In addition, it is suggested that CCA be embedded in job descriptions and standard operating procedures throughout government or an organisation instead of centralising the responsibility so that the limited resources available and allocated to each government department or official can be utilised to achieve multiple targets, including CCA imperatives (Burch et al., 2014).

Therefore, it is recommended that CapeNature considers this approach within the entity, and due to its placement as a provincial government entity, it could lobby for this approach to become standard across local and provincial government in the WC in aid of improving good governance for CCA, the optimal use of limited financial resources and articulating CCA as a priority towards garnering the requisite resources required in this regard.

5.6 COMMUNICATION

From the findings discussed in Chapter 4, it was evident that CapeNature's CCA approaches considered the 'Communication' approach as part of its CCA plans.

England (Burch et al., 2014) and Australia (ACT Government, 2013) indicate that communication is an important element of CCA. Australia adds that there should be targeted community education campaigns on priority issues such as CCA, and that youth must be engaged and encouraged to become involved in nature conservation and to this end, linked to its PAs, Australia has various targets such as *"Number of education campaigns delivered"* and *"Number of students involved in learning activities in these sites"* (ACT Government, 2013, p.30). Similarly, CapeNature's CCA plans demonstrate communication mechanisms such as environmental awareness campaigns and stakeholder engagement programmes that focus on youth, learners, and broader communities, and they are thus well aligned with the approaches employed in other countries.

CapeNature, however, raised challenges of ensuring that the intended audience understands the information being communicated and that there is a need to measure if communication

interventions have the desired impact. These challenges are not isolated to CapeNature and, as an example, Australia indicates that in order to increase community understanding and support for the protection of biodiversity to improve the chances of the success of CCA responses, its education and awareness interventions are implemented in partnership with the education sector and the associated community groups (ACT Government, 2013). It is thus recommended that CapeNature establish a formal partnership with the education sector and relevant community structures involved in education to assist with enabling communication that is palatable and understood by the intended audience. Partnerships with tertiary education institutions could potentially also assist with measuring if communication interventions have the desired impact.

5.7 POLICY, FRAMEWORKS AND MAINSTREAMING

From the findings discussed in Chapter 4, it was evident that CapeNature's CCA approaches considered the 'Policy, frameworks and mainstreaming' approach as part of its CCA plans.

Various countries such as Brazil (Scarano, 2017), England (Burch et al., 2014) and Germany (Reyer et al., 2012) employ mainstreaming as part of their CCA responses that, inter alia, entails integrating biodiversity concerns into legislation, plans and policies to inform appropriate land-use across various sectors towards CCA. This mainstreaming approach has a major influence on how land is used in England (Burch et al., 2014) and how biodiversity concerns find their way into land-use planning at a municipal landscape framework level to facilitate an integrated approach to CCA in Germany, which, as an example, considers actions both inside and outside of Germany's nature parks (Reyer et al., 2012). Equally, CapeNature's CCA approaches, which, as an example, include mainstreaming the content of the WC Biodiversity Spatial Plan into land use considerations at a municipal scale and tracking and monitoring the integration of these considerations into municipal spatial planning tools, is well aligned to the suggested approaches from the literature.

CapeNature raised the challenge of continued fragmented approaches to climate change responses under the CCA approach of 'Policy, frameworks and mainstreaming' again, i.e. certain developments taking place in areas that are important for CCA and hence not aligned to or integrated within the larger CCA frameworks. Similarly, England raised challenges of conflicting priorities and policy inconstancy or incongruence (Burch et al., 2014), leading to a

fragmented approach to CCA. It should be noted that the recommendations related to the challenge of fragmentation were discussed in Sections 5.1 and 5.2.

CapeNature identified opportunities to improve its 'Policy, frameworks and mainstreaming' approach by capitalising on the entity's position within government to actively lobby for and guide appropriate development at a provincial scale (Section 4.1.7) and to increase synergy between mainstreaming, participatory, communication, and capacity initiatives to enhance and improve their CCA impact, which is aligned to the recommendations that emerged from the suggested approaches from the literature to improve CCA as discussed in Sections 5.4, 5.6 and 5.8.

Worth noting is that England raised barriers to 'mainstreaming', such as the lack of financial and human capacity to incentivise and implement actions (Burch et al., 2014). Therefore, while CapeNature did not explicitly link financial and capacity constraints as a challenge to its 'Policy, frameworks and mainstreaming' CCA approach, one can reasonably consider that, as in the case of England, CapeNature's financial and subsequent capacity challenges might be a barrier that hampers its mainstreaming interventions. This is because CapeNature has raised the challenges of limited finances and capacity for CCA as concerns in various of its other CCA approaches (see Sections 5.1, 5.2, 5.3 and 5.5). In response to the barriers that England raised, the country suggests solutions that include the creation and/or maintenance of incentives to manage landscapes collaboratively and embedding CCA in job descriptions and day-to-day practice, as this may result in the allocation or creation of sufficient capacity (Burch et al., 2014). In addition, as suggested under the 'Good governance' approach (Section 5.5), responses to barriers include embedding CCA in job descriptions throughout government and in standard operating procedures (Burch et al., 2014). It is therefore recommended that CapeNature consider employing these mechanisms to enhance its mainstreaming efforts.

This discussion and recommendations highlight the fact that the various CCA characteristics are interlinked, as matters linked to finances (5.10), capacity (5.8), governance (5.5), participation or collaboration (5.4), and issues pertaining to fragmentation (as discussed in Sections 5.1 and 5.2) came to the fore under the policy, frameworks and mainstreaming approach.

The challenge of financial constraints is discussed under Section 5.10 (Sustainable finance).

5.8 CAPACITY

From the findings discussed in Chapter 4, it was evident that CapeNature's CCA approaches considered the 'Capacity' approach as part of its CCA plans.

In the US Southwest, capacity for CCA is developed through documents and sharing knowledge through dedicated learning networks (McCarthy, 2012). In a similar fashion, CapeNature implements programmes to facilitate learning and development, and the entity uses documents, such as standard operating procedures, to share knowledge and build capacity. The Nottawasaga Valley Conservation Authority in Canada collaborates with other conservation authorities, municipalities and its provincial government to enhance its CCA capacity (Nottawasaga Valley Conservation Authority, 2022). Stringer et al. (2009) state that for governments to meet climate change obligations, climate change capacity is necessary within a conservation organisation as well as outside of the organisation, i.e., the capacity of all stakeholders and participants involved in climate change-related action should be built. Likewise, CapeNature collaborates with various stakeholders, including municipalities and provincial government, to enhance its CCA capacity, and to build the CCA capacity of stakeholders such as, inter alia, municipalities and, therefore, CapeNature's CCA approach in terms of 'Capacity' generally compares well to suggested approaches from literature.

In Europe, staff in PAs are developed to build the required skills and competencies not only to manage the park but also to engage stakeholders to foster genuine collaboration, build trust and enable buy-in in conservation projects such as restoration activities to respond to the adverse effects of climate change and build climate resilience (EUROPARC, 2023). Similarly, CapeNature's CCA approaches seek to build the capacity of its staff through training and skills development to enhance staff capability; however, this is subject to the availability of financial resources.

CapeNature raised challenges such as financial constraints, subsequent loss of human resources, and difficulty developing and/or enhancing CCA capability/ability. This problem is not unique to CapeNature as various conservation organisations in the United States of America share the sentiment that inadequate financial and human resources undermine CCA

capacity and capability (Armsworth, Larson, Jackson, Sax, Simonin, Blossey, Green, Klein, Lester, Ricketts, Runge and Shaw, 2015). Therefore, when grappling with issues of capacity and capability, a conservation organisation should interrogate its size and area of operation (e.g. does it need to hire new personnel, whether to manage new properties, whether it can and should expand into a new area); it should consider if it can depend on local partners to execute conservation actions; and how the organisation should be structured in terms of e.g. the number of units, their focus areas, and the resourcing of various operating units (Armsworth et al., 2015). It is thus recommended that CapeNature critically contemplate the size and structure of the organisation and its priority and focus areas, as CCA requirements evolve over time, and readjust as necessary as per the suggestions from the literature.

CapeNature also identified establishing internal capacity (i.e., an internal sustainable financing unit) to generate sustainable financing as an opportunity and/or to garner external capability to capitalise on sustainable financing opportunities or options. Therefore, establishing an internal sustainable financing unit could be possible, subject to gaining financial resources to enable this for CapeNature (see Section 5.10, sustainable finance). However, this approach should be combined with other options, such as those suggested by Armsworth et al. (2015). This is because the mandate of CapeNature is vast, and the need for and rationale for collaboration with other parties will always be a necessity, and the need for contemplating the size and reorganising the structure of the organisation will be of relevance as well as CCA requirements evolve.

The challenge of financial constraints is discussed under Section 5.10 (Sustainable finance).

5.9 INFRASTRUCTURE

From the findings discussed in Chapter 4, it was evident that CapeNature's CCA approaches considered infrastructure as part of its CCA plans.

In Switzerland, for example, Basel has adopted green roofs and green walls in its infrastructure designs to aid CCA (European Environment Agency, 2018; Brenneisen and Baumann, 2024). Similarly, CapeNature's CCA approaches include infrastructure designs such as green roofs, as well as designs that have limited impact on the environment through lightweight buildings that can be relocated easily, waterless toilets and rainwater harvesting

and designs that allow for natural climate regulation in buildings and, as such, CapeNature's Infrastructure approaches correspond well to the suggested approaches from the literature.

CapeNature raised the challenge of financial constraints that undermine the entity's ability to implement CCA infrastructure plans, e.g. not being able to retrofit, relocate or rebuild existing structures in a fashion that aids CCA, not having access to requisite infrastructure such as suitable management roads across its PAs and compromised recreational infrastructure (e.g. hiking trails) which, in turn, undermines revenue enhancement endeavours and the ability to manage the PAs as infrastructure such as hiking trails and roads are needed to reach various areas in the PA that require management interventions.

The challenge of financial constraints is discussed under Section 5.10 (Sustainable finance).

5.10 SUSTAINABLE FINANCE

From the findings discussed in Chapter 4, it was evident that CapeNature's CCA approaches considered sustainable finance as part of its CCA plans.

Germany indicates that funding that allows for the proper planning and implementation of CCA plans over the long term is vital (Reyer et al., 2012), and Australia (ACT Government, 2013) reiterates this by indicating that the implementation of actions and, consequently the success of CCA, is ultimately dependent on the availability of funding. CapeNature is of the same view, having indicated and identified the need for suitable funding to be availed for CCA planning and implementation over the long term.

CapeNature raised financial constraints and a lack of sustainable financing, as well as subsequent capacity, capability, and operational resource constraints, as significant risks to its desire to implement its CCA plans over the long term. This problem is equally evident in various countries such as Australia (ACT Government, 2013), England (Burch et al., 2014), Brazil (Scarano, 2017), the United States (McCarthy, 2012) and Europe (EUROPARC, 2023), that have raised the lack of funding as a challenge to CCA and England specifically added that this subsequently has a negative impact on various other important CCA aspects such as much-needed capacity (including human and other operational resources) and ability (such as knowledge and skill) to adapt to climate change (Burch et al., 2014).

In response to the challenge of sustainable financing, the WWF and Amazon Sustainable Landscapes Program (Cabrera, Planitzer, Yudelman and Tua, 2021) indicate that organisations must design a fundraising strategy and that it is essential that, as part of the strategy, a dedicated fundraising champion who is committed to this function is in place. In line with this thinking, CapeNature proposed solutions such as establishing a sustainable financing unit in the organisation and/or sourcing external capability to capitalise on sustainable financing opportunities, as well as actively engaging the Provincial Treasury and Department of Environmental Affairs and Development Planning to assist CapeNature in closing funding gaps. Therefore, while CapeNature has, for example, considered and documented the income generation potential of PAs in the WC to generate funding, it is recommended that the entity makes a concerted effort to elevate its existing documentation and to design a robust financing strategy that includes the establishment of a dedicated fundraising champion or sustainable financing unit, with the requisite technical capacity, to drive the implementation of the fundraising strategy as suggested by the literature.

As various countries across the globe have raised this issue, using climate change and the need for adaptation as a backdrop, the WWF and Amazon Sustainable Landscapes Program (Cabrera et al., 2021) and UNEP (2023) have recognised the financial challenges that conservation faces and have investigated the notion of securing sustainable financing for conservation areas. Sustainable financing mechanisms generally include (i) sources of capital such as public funding (Cabrera et al., 2021; UNEP, 2023), accessing international adaptation finance (UNEP, 2023), partnering NGOs, partnering philanthropy donors (Cabrera et al., 2021) and availing programmes for international return-seeking investors (Cabrera et al., 2021; UNEP 2023); (ii) revenue streams such as entrance, licenses and permit fees, debt for nature swaps, payment for ecosystem services and concessions (Cabrera et al., 2021) (iii) and other structured arrangements such as market arrangements for ecosystem services and natural resources (Cabrera et al., 2021). It is thus recommended that as part of its endeavour to close its CCA financing gap, CapeNature explore and capitalise on these financing mechanisms.

WWF and the Amazon Sustainable Landscapes Program also identified a possible means to address the challenge of long-term sustainable financing through the Project Finance Permanence approach, which includes five phases: identification, assessment, readiness, design, and implementation (Cabrera et al., 2021). Brazil is utilising this approach (Cabrera et

al., 2021). In Brazil, there is a need to consolidate and conserve six million hectares of conservation units in the Amazon rainforest, and by pulling together and coordinating various partners such as, amongst others, the Ministry of Environment in Brazil, the Global Environment Facility and WWF, the country activated the Project Finance Permanence approach. Through this process, Brazil managed to secure donor funding to the tune of 125 million US dollars for phase one of the project, an additional 121 million US dollars was allocated for phase two of the project, and additional financial commitments to be invested over a 25-year period to achieve long-term goals will be availed by various role players (Cabrera et al., 2021). This sustainable financing approach is based on legally binding documents that indicate when and how donor funds will be disbursed, which in turn is based on the performance of the project in relation to agreed-on actions and targets (Cabrera et al., 2021).

It is therefore suggested that the Project Finance Permanence approach is an opportunity that CapeNature could explore. However, having the requisite dedicated capacity to explore sustainable financing from various mechanisms was highlighted as a key enabler by WWF and the Amazon Sustainable Landscapes Program (Cabrera et al., 2021).

According to the World Bank (2024), the estimated annual financing gap for the conservation of biodiversity and ecosystems is approximately $800 billion. Therefore, to assist in alleviating financial challenges in the biodiversity and conservation sector, the World Bank initiated the Wildlife Conservation Bond, a *"first-of-its-kind outcome-based, financial instrument that channels investments to achieve conservation outcomes"* (World Bank, 2024, p.1). The Wildlife Conservation Bond tests a novel model for funding conservation action in two parks in SA, i.e. Addo Elephant National Park under the management of the SANParks and the Great Fish River Nature Reserve under the management of the Eastern Cape Parks and Tourism Agency (World Bank, 2022). The bond is a 'World Bank Sustainable Development Bond' that allows investors to invest in the conservation of rhinos in the two parks (World Bank, 2024). This bond is a $150 million investment over five years, it was issued in 2022 and has a maturity date of 2027 (World Bank, 2024). If a predetermined rhino growth rate is not achieved at the maturity date of the bond, the investors are refunded their principal investment only; however, if the predetermined rhino growth rate is achieved over five years, the investors will receive their original investment and an additional return back from the World Bank (World Bank, 2024). This mechanism allows the two parks to have

access to financing, over the five-year bond period, that they would not have had access to; it transfers the risk associated with project implementation to the capital market investors as they will only be paid additional returns on the achievement of a successful conservation outcome; and the conservation authorities benefit from the arrangement without any financial risk to them as the World Bank will do payouts with funds from the Global Environment Facility (World Bank, 2024). The Wildlife Conservation Bond not only aids in rhino protection but also contributes to conservation at large and responds to socio-economic imperatives by supporting over 2000 jobs from surrounding local communities, who assist in conserving biodiversity in these parks through improved conservation management activities (World Bank, 2024). According to the World Bank (2022), this financial mechanism can be repeated and scaled to attract additional private capital investment to other conservation and climate actions across the globe.

It is therefore suggested that the Wildlife Conservation Bond approach is an opportunity that CapeNature could explore.

5.11 CONCLUSION

This research study has revealed that CapeNature does not have a single all-encompassing CCA plan but has various CCA approaches that consider the key characteristics necessary for good CCA. However, the entity faces various challenges regarding its intention to implement these approaches over the long term. Challenges ranged from a fragmented approach to CCA to compromised capacity and capability to implement their CCA plans over time. A recurring challenge was the lack of financial resources, and this, combined with the entity's current inability to secure sustainable financing, was emphasised as the key factor to be addressed towards facilitating the success of the entity's CCA plans. It also emerged that CCA approaches are interdependent and linked and that in various instances, when one key CCA characteristic was compromised, it had a detrimental effect on other CCA approaches. A comparison of the findings with those of other parts of the world revealed similar constraints elsewhere, and where possible, potential solutions and opportunities to mitigate the challenges and enhance CapeNature's CCA plans were identified and extracted. Enhancing CapeNature's ability to implement its CCA plans would definitely be beneficial to responding to the risk that climate change poses in the WC as it would improve climate resilience.

CHAPTER 6: CONCLUSION

This chapter starts with a high-level summary of the suggested recommendations, as discussed in Chapter 5, it puts forward general considerations, and it indicates the limitations and opportunities for further research. It also indicates a high-level summary of the main research findings and ends with concluding remarks.

6.1 SUMMARY OF RECOMMENDATIONS

Based on the research findings and discussions, it is recommended that CapeNature consider the following points:

6.1.1 Integrated communication and collective action

CapeNature can consider integrating local knowledge and scientific knowledge in CCA and combine and integrate communication tools and participation [to mainstreaming efforts] as a means of reducing fragmentation and enabling collective action as suggested by Reyer et al. (2012). In addition to this, amidst various geographical areas that require attention towards CCA, CapeNature should point out the most sensitive and exposed areas to steer collective pointed intervention to specific areas (Reyer et al., 2012; Scarano, 2017).

6.1.2 Collaboration and partnerships

In aid of collaboration for CCA, CapeNature could benefit from collaborating with social sciences to explore the development of models that link conservation with society and social change to improve CCA responses that can support positive social and or behavioural changes in society towards CCA for climate resilience (Dangles et al., 2016, cited in Scarano, 2017). The entity can also engage and partner NGOs, relevant specialists and communities to aid in forming appropriate and rigorous participatory mechanisms for specific CCA plans and interventions (Stringer et al., 2009). In addition, the agency can establish a formal partnership with the education sector and relevant community structures involved in education to assist with enabling CCA communication that is palatable and understood by the intended audience (ACT Government, 2013). Partnering with tertiary education institutions could potentially also assist with measuring if communication interventions have the desired impact. Added to this CapeNature should maintain or create incentives to collaboratively manage landscapes as advised by Burch et al. (2014) and maintain and build additional partnerships and

collaborations to enhance CCA capacity and capability as guided by Armsworth et al. (2015). Lastly, in terms collaboration for improved science-based approaches, the entity can further enhance the use of citizen science by actively drawing from established groups and individuals who are willing to volunteer their skills and experience and enhance key partnerships across government, community, private sector and research organisations (ACT Government, 2013).

6.1.3 Joint responsibility and accountability

In aid of CCA, CapeNature can embed CCA responsibility in job descriptions and standard operating procedures throughout the organisation, and advocate for this to happen across government, instead of centralising the responsibility (Burch et al., 2014). In addition, as CCA requirements evolve over time, the entity can critically contemplate its size and structure, its priority, and its focus areas and readjust as necessary (Armsworth et al., 2015).

6.1.4 Sustainable financing for CCA

Concerning suitable financial resources for CCA, CapeNature can develop a sustainable financing strategy (Cabrera et al., 2021) and to realise this strategy the entity should establish dedicated capacity to explore and coordinate sustainable financing opportunities (Cabrera et al., 2021). The entity should explore and capitalise on existing financing mechanisms that, inter alia, include public funding and partaking in programmes for international return-seeking investors (Cabrera et al., 2021; UNEP, 2023). In addition, CapeNature can consider exploring and implementing the Project Finance Permanence approach to aid sustainable financing (Cabrera et al., 2021). The entity can also explore the Wildlife Conservation Bond approach to help alleviate financial challenges (World Bank, 2022; World Bank, 2024).

6.1.5 General considerations

6.1.5.1 Develop a single document

CapeNature should consider developing a single document that is titled appropriately, with a preamble explaining that the entity does not have a single overarching CCA document. This document should explain the rationale for this approach and identify the various standalone documents containing CapeNature's CCA plans. This proposed single document should contextualise how these individual documents apply to CapeNature and contain an electronic link for the reader to access each standalone document. The proposed single document should

ideally also briefly highlight key elements, strategies, actions or indicators that a specific standalone document identifies for CapeNature's actioning towards CCA for climate resilience. This is for the reader to be able to navigate to the most suitable document quickly and easily, should they be looking for specific CapeNature CCA responses.

In addition, notwithstanding the fact that CapeNature does not currently have a desire to draft a separate document as the entity's Climate Change Response Strategy, considering the realities of climate change and the fact that there is a general expectation that Conservation Authorities play an important role in CCA, CapeNature should consider developing a specific CCA plan for the entity.

6.1.5.2 Develop an investment catalogue

Develop an easily accessible investment catalogue that any organisation or individual interested in supporting CapeNature's mandate and CCA plans can consult. As an example, the catalogue could include projects with a return-on-investment element (e.g. concession agreements), direct financial donations (within the prescripts of the Public Finance Management Act) and various in-kind contributions (e.g. volunteering equipment and/or skills and time to projects).

6.1.5.3 Collaborate with non-conventional partners

To enhance participation by the broader community in CCA planning, CapeNature should consider partnering with NGOs and Non-Profit organisations that are interested in improving participation of local communities and 'making their voices heard', joint decision-making and shared ownership at the grass-roots level. This could include organisations interested in social justice, climate justice and effective and cooperative governance at local levels.

6.2 LIMITATIONS OF THE STUDY

According to Bowen (2009), while many documents are in the public domain, a limitation of a study using document analysis is that not all documentation that may have added value to the research may be retrievable as they are either not available in the public domain and or access may be blocked purposefully. This study may have been subjected to this limitation as the researcher was dependent on the participants to provide some of CapeNature's CCA documents.

The focus groups and individual interviews were conducted online and not in person. Therefore, subtle cues from respondents (e.g. facial expression or body language) that may have provided more context from the respondents' perspective to the researcher could have been missed.

6.3 RECOMMENDATIONS FOR FUTURE RESEARCH

The study considered CapeNature's CCA plans through a management lens by evaluating whether the key characteristics of good CCA plans were considered. Therefore, future research could include the following:

- Further studies to consider the quality or technical robustness of each of CapeNature's CCA plans and approaches could be useful.
- Further studies to determine the degree to which CapeNature has implemented its CCA plans, or implemented elements thereof, could prove to be useful.
- Dedicated studies that investigate and provide practical recommendations or step-by-step approaches to developing sustainable financial mechanisms for CCA in the Biodiversity Management and Conservation discipline could be very useful.

6.4 ALIGNMENT WITH RESEARCH OBJECTIVES AND HIGH-LEVEL SUMMARY OF FINDINGS

The goal of the research was to identify and evaluate CapeNature's CCA plans against the key characteristics that emerged from the literature for CCA and resilience planning in PAs and ecosystems.

The objectives of the research were to:

- clarify the concepts, identify benchmarks, and assess the constraints for CCA and resilience planning in PAs and ecosystems in the context of South Africa.
- identify the current CCA planning and management approaches of CapeNature.
- evaluate the current CapeNature CCA plans and identify the key challenges and opportunities associated with CCA planning and management towards climate resilience.
- make recommendations to CapeNature to improve their CCA and resilience planning.

The objectives of this study were met by conducting a comprehensive literature review to clarify concepts and identify benchmarks for good CCA. This was followed by identifying and obtaining CapeNature's CCA plans and approaches through focus groups, individual interviews, and document analysis. The data obtained via the three data collection techniques was compared and contrasted and synthesised to identify challenges and opportunities. This process assisted with triangulation. The findings were also considered in relation to the key characteristics for good CCA to evaluate if there was alignment in this regard. This was followed by comparing the findings with case studies, CCA plans and strategies from various countries to identify similarities, differences and opportunities for improvement, leading to relevant conclusions and recommendations that could enhance CapeNature's CCA plans.

The research contributed to building the theory and practical understanding of good CCA characteristics and provided implementable recommendations to CapeNature, which could also be useful to other conservation agencies. The findings show that CapeNature does not have a single all-encompassing document that presents its CCA plan but that the entity has various standalone documents and approaches that are aligned with the key characteristics of good CCA. This means that the entity considers Protected areas and protected area networks; EBA; Science-based CCA; Participatory; Good governance; Communication; Policy, frameworks and mainstreaming; Capacity; Infrastructure and Sustainable finance approaches towards CCA. However, the study revealed substantial challenges, most notably the lack of sustainable financing, which jeopardises CapeNature's ability to implement its CCA plans over the long term. Developing a sustainable funding strategy and acquiring the requisite capacity to explore, coordinate and secure sustainable financing were recommended to address the challenges.

The study's main results highlighted a critical and urgent need for financial and capacity interventions to enable CapeNature to be in a reasonable position to ensure effective planning and implementation of its CCA plans over the long term.

6.5 CONCLUSION

The impact of human-induced climate change has led to unprecedented global warming (WWF, 2021; CBD, 2019). What is concerning is that the impacts of climate change and the associated extreme weather events such as heatwaves, droughts and floods continue to ensue

and are increasing in frequency and intensity (WWF, 2021; CBD, 2019). In addition, it has been highlighted that this climate change trajectory poses a risk to the Earth's ability to continue providing sustainable ecosystem services necessary to sustain life on Earth (IPCC, 2014). Therefore, instead of allowing a dire situation of no life on Earth to ultimately ensue due to human-induced climate change, it is best to take collective action now and ensure that the various CCA plans, such as that of CapeNature, are appropriately resourced.

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ANNEXURE A: FOCUS GROUP QUESTIONS

Focus group questions for 'An evaluation study of the climate change adaptation plans for a provincial conservation authority in South Africa.'

Good morning, my name is Eleanor van den Berg-McGregor.

Welcome to this focus group meeting and thank you very much for agreeing to participate in this research. I have received all your signed 'Participant Informed Consent Declaration" forms and I appreciate the time that you took to complete and send it back to me.

As per our previous communication, this research pertains to 'An evaluation study of the climate change adaptation plans for a provincial conservation authority in South Africa' – and in this instance the conservation authority is 'CapeNature'.

The purpose and objectives of the research have already been communicated in writing to all participants.

The definition of climate change adaptation and climate resilience, for the purpose of this research, have already been shared in writing with all participants as well.

I would thus like to request that we do a quick round of introductions please. As per the options provided in the 'Participant Informed Consent Declaration" forms, if you so wish, you are welcome to remain anonymous in this focus group session and to use a pseudonym.

(Introductions) - Thank you for introducing yourselves.

Are there any comments or questions for clarification thus far?

Researcher responds to comments or questions if any.

Now we will start the focus group discussion:

Focus group questions for 'An evaluation study of the climate change adaptation plans for a provincial conservation authority in South Africa.'

1. Considering the definitions of Climate Change Adaptation and Climate resilience, what does CapeNature do in terms of CCA towards climate resilience?

2. Are the programmes / actions / strategies that you mentioned in your responses to question 1 documented anywhere? (*researcher prompt respondents to specify e.g.*)

a. Which documents can the plans be found in?
b. How were the plans developed?
c. Who participated in the development of the plans?

3. In relation to the programmes / actions / strategies that you identified in questions 1 and 2,
    a. what works and why does it work?
    b. What does not work and why does it not work?

4. In your opinion, which other elements/factors/characteristics that you have not mentioned (as part of CapeNature's plans) do you deem important in CCA planning? Why?

5. A few key themes emerged from the literature for climate change adaptation plans towards climate resilience as follows (*Note:* any *themes under points 5.1-5.10 that emerged from the literature but did not emerge from respondents will be mentioned to the focus group for discussion as follows.)*

    5.1 Science-based: Do you consider it important for CCA plans to be science-based? If yes, why? If no, why not?

    5.2 Participatory: Do you consider a participatory approach to be important aspect in the development of CCA plans If yes, why? If no, why not?

    5.3 Good governance: Do you deem good governance to be an important aspect in the development and management of CCA plans? If yes, why? If no, why not?

    5.4 Communication (Awareness raising / Environmental Education): Do you consider communication to be important aspect in the development of CCA plans? If yes, why? If no, why not?

    5.5 Protected areas and networks: Do you think that Protected areas, PA networks and PA expansion are important elements of CCA planning? If yes, why? If no, why not?

5.6 Ecosystem-Based Adaptation: Do you think that Ecosystem-Based Adaptation is an important element of CCA planning? If yes, why? If no, why not?

5.7 Mainstreaming of CCA plans: Do you think that the mainstreaming of CCA plans is an important element of CCA planning? If yes, why? If no, why not?

5.8 Capacity building: Do you think that capacity building is an important element of CCA planning? If yes, why? If no, why not?

5.9 Infrastructure: Do you think that CCA plans should consider infrastructure (e.g. buildings) and or tourism / recreation infrastructure (e.g. foot paths and cycle paths). If yes, why? If no, why not?

5.10 Sustainable finance: Do you think that sustainable finance is an important element of CCA planning? If yes, why? If no, why not?

6. Does CapeNature face any challenges in terms of CCA planning and management towards climate resilience?

7. Is CapeNature aware of any opportunities associated with CCA planning and management towards climate resilience?

8. Is there any other information relevant to this study that anyone in the group would like to share or bring under my attention?

ANNEXURE B: INDIVIDUAL INTERVIEW QUESTIONS

Individual Interview questions for 'An evaluation study of the climate change adaptation plans for a provincial conservation authority in South Africa.'

Good day and welcome to the follow-up individual interview session. I appreciate the time that you have set aside to participate in this research study.

As per the options provided in the 'Participant Informed Consent Declaration" form, if you so wish, you are welcome to remain anonymous in this study. Can you please confirm your preference in this regard and state your name and designation for my records.

(*Participant confirms preference and provides name and designation for Researcher's records*) – Thank you for your confirmation.

I would like to confirm that this research pertains to 'An evaluation study of the climate change adaptation plans for a provincial conservation authority in South Africa' – and in this instance the conservation authority is 'CapeNature'.

The purpose and objectives of the research have already been communicated in writing to all participants.

The definition of climate change adaptation and climate resilience, for the purpose of this research, have already been shared in writing with all participants as well.

Are there any comments or questions for clarification thus far?

Researcher responds to comments or questions if any.

Now we will start the interview questions:

Individual Interview questions for 'An evaluation study of the climate change adaptation plans for a provincial conservation authority in South Africa.'

High level predetermined themes	**Questions**
Science-based	What is your understanding of Science-based Climate Change Adaptation planning?

	Are you of the view that CapeNature's Climate Change Adaptation plans are science based? If yes, can you please elaborate on this? If no, how do you think the plans can become more science based?
Participatory	Are you of the view that CapeNature's Climate Change Adaptation plans were developed in a participatory manner? If yes, can you please elaborate on this? If no, how do you think this can be improved in future?
Good governance	What is your understanding of Climate Change Adaptation planning governance? Are you of the view that there is a good governance system in relation to Cape Nature's Climate Change Adaptation planning? If yes, can you please elaborate on this? If no, how do you think this can be improved in future?
Communication	Are you of the view that CapeNature's Climate Change Adaption plans are communicated effectively to its external and internal stakeholders? If yes, can you please elaborate on this? If no, how do you think this can be improved in future?
Protected area networks and expansion	What is your understanding of protected area networks and expansion? Are you of the view that CapeNature's Climate Change Adaptation plans give consideration to protected area networks and expansion? If yes, can you please elaborate on this and also indicate if there are sufficient resources in this regard?

	If no, how do you think this can be improved in future?
Ecosystem-Based Adaptation	What is your understanding of Ecosystem-Based Adaptation? Are you of the view that CapeNature's Climate Change Adaptation plans contribute to Ecosystem-Based Adaptation? If yes, can you please elaborate on this? If no, how do you think this can be improved in future?
Mainstreaming	What is your understanding of Mainstreaming? Are you of the view that CapeNature's Climate Change Adaptation plans have been mainstreamed? If yes, can you please elaborate on this? If no, how do you think this can be improved in future?
Capacity building (stakeholders, staff, institution)	What is your understanding of capacity building? Are you of the view that CapeNature's Climate Change Adaptation plans give consideration to / caters for capacity building? If yes, can you please elaborate on this and also indicate if there are sufficient resources in this regard? If no, how do you think this can be improved in future?
Infrastructure	Are you of the view that CapeNature's Climate Change Adaptation plans give consideration to built infrastructure (e.g. buildings) and/or tourism / recreation infrastructure (e.g. foot paths and cycle paths). If yes, can you please elaborate on this? If no, how do you think this can be improved in future?

Sustainable finance	Are you of the view that CapeNature has sufficient resources for the development of Climate Change Adaptation plans, implementation, monitoring and evaluation? If yes, can you please elaborate on this? If no, can you please elaborate on this and indicate how this can be improved in future?
	Is there any other information relevant to this study that you wish to share or bring under my attention?
Emerging theme/s from participant	

ANNEXURE C: EXAMPLE OF INFORMED CONSENT LETTER SENT TO PARTICIPANTS

PARTICIPANT INFORMED CONSENT DECLARATION

(To be signed by research participant/s)

Project Title: **An evaluation study of the climate change adaptation plans for a provincial conservation authority in South Africa**

Eleanor van den Berg-McGregor from the Faculty of Commerce (Rhodes Business School), Rhodes University has requested my permission to participate in the above-mentioned research project.

The nature and the purpose of the research project, and of this informed consent declaration, have been explained to me in a language that I understand.

I am aware that:

1. The purpose of the research project is to identify and evaluate a provincial conservation agency in South Africa (i.e. CapeNature in the Western Cape) Climate Change Adaptation (CCA) plans against the key characteristics that emerged from the literature for Climate Change Adaptation and resilience planning in protected areas and ecosystems.

   The objectives of the research are to:

   - clarify the concepts, identify benchmarks, and assess the constraints in the context of South Africa.
   - identify the current CCA planning and management approaches of CapeNature.
   - evaluate the current CapeNature CCA plans and identify the key challenges and opportunities associated with CCA planning and management towards climate resilience.
   - make recommendations to CapeNature to improve their CCA and resilience planning.

   The research hopes to contribute to the existing body of knowledge on key elements for good CCA plans. It aims to suggest recommendations to CapeNature to enhance its plans, and these recommendations may be of relevance to other conservation agencies as well.

2. Rhodes University has given ethical clearance to this research project ***(2023-7152-7796)*** and I have seen/may request to see the clearance certificate by contacting the Ethics Coordinator (ethics-committee@ru.ac.za).

Rhodes University, Research Office, Ethical Review
Ethics Coordinator: ethics-commitee@ru.ac.za
t: +27 (0) 46 603 7727 f: +27 (0) 86 616 7707
Room 204, Main Admin Building, Drostdy Road, Grahamstown, 6139

3. By participating in this research project I will be contributing towards:

   - bringing together CapeNature's various plans (that contribute to Climate Change Adaptation planning and resilience) into a single document i.e. the mini-thesis. The mini-thesis can thus be used as a single reference point to locate the Climate Change Adaptation plans of CapeNature.
   - suggesting recommendations to CapeNature to enhance its plans, and these may be of relevance to other conservation agencies as well.
   - the existing body of knowledge on key elements for good Climate Change Adaptation plans.

4. I will participate in the project by partaking in an online focus group discussion, a follow-up online individual interview and providing relevant document(s) [indicating CapeNature's Climate Change plans] to be evaluated as part of the study.

5. My participation is entirely voluntary and should I at any stage wish to withdraw from participating further, I may do so without any negative consequences.

6. I will not be compensated for participating in the research.

7. The following risks are associated with my participation:

   Risk:
   - Participants have the option to remain anonymous or to be acknowledged and thus lose anonymity as their name and designation that they hold at the organisation will become public knowledge.
   - The perspectives and insights on what (according to participants) works and does not work in CapeNature's current Climate Change Adaptation planning approaches may not be unanimous during the focus group discussion and there may be a risk in this regard.
   - The Programme Managers may not wish to share information freely in the presence of the Executive Directors, thus skewing the data obtained.

   Mitigation:
   - Section 8 of the document affords participants the right to indicate their preference i.e. not to be acknowledged in the study and to remain anonymous; or to be acknowledged and to lose anonymity.
     A copy of the mini-thesis will be availed to the organisation. However, should CapeNature request a copy of interview transcript this will not be availed unless the participants agrees to such.
   - During the focus group discussion, the researcher/student will employ facilitation skills that allows for all parties to share their perspectives and insights freely; and where relevant a consensus building approach and/or an agreeing to disagree approach will be facilitated.

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- The focus group will be followed by an individual interview session which will allow for each participant to share additional information from their perspective in a one-on-one session directly with the researcher/student.

8. The Researcher intends to publish the research results in the form of a mini-thesis and it is intended for participants to be acknowledged for their participation in the study. This will be done by stating the participant's name and the designation that they hold in the organisation under the 'acknowledgements' section of the mini-thesis.
Participants have the right to indicate their preference i.e. not to be acknowledged and to remain anonymous; or to be acknowledged and to lose anonymity. Please indicate your preference below.

   I **do/ do not** (strike through inapplicable option) wish to be acknowledged in the 'acknowledgments' section of the mini-thesis.

9. In terms of the Protection of Personal Information Act (POPIA) (No. 4 of 2013), I understand that if I choose to lose anonymity, under point 8 above, my name and designation that I hold at CapeNature will become public knowledge.
I understand that irrespective of my selection under point 8 above, POPIA will be complied with in terms of data collected via interviews (i.e. the records will be kept safe and secure and interview transcripts will be kept confidential).

10. If any data collected from me for this research project is to be used by the Researcher for any further study, I am to be informed in writing and my written consent requested again. I do not need to give consent for the new research if it is incompatible with the initial purpose of the present study (POPIA, s15(3)). Equally, I can simply reject the request. In such cases, a formal request needs to be made to me by the researcher via the Ethics Coordinator (ethics-committee@ru.ac.za).

11. In terms of the POPI Act, I possess the right to receive feedback about this research. This will take the form of the provision of an electronic copy of the mini-thesis to the participant, unless I elect not to receive this feedback.

    I **do/ do not** (strike through inapplicable option) want a copy of the mini-thesis once it has been sanctioned as a final product by the Rhodes University.

12. Any further questions that I might have regarding the nature of the research and/or my participation in it will be answered by Eleanor van den Berg-McGregor, email: [redacted]

13. By signing this informed consent declaration, I am not waiving any legal claims, rights, or remedies. A copy of this informed consent declaration will be given to me, and the original will be kept on record by the researcher.

Rhodes University, Research Office, Ethical Review
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14. I agree/ disagree (strike through inapplicable option) to the researcher's use of voice recording of my comments and opinions during interviews, the purpose of which is to ensure the accurate recording of my views/responses. Voice recordings of online meetings are for data collection and verification purposes and will not be publicised or compromise anonymity in any way. Furthermore, I have the right to request a copy of the interview transcriptions to confirm that my opinions are accurately recorded.

15. I agree/ disagree (strike through inapplicable option) to the researcher's use of video recording of my comments and opinions during interviews, the purpose of which is to ensure the accurate recording of my views/responses. Video recordings of online meetings are for data collection and verification purposes and will not be publicised or compromise anonymity in any way. Furthermore, I have the right to request a copy of the recordings to confirm that my opinions are accurately recorded.

I, ..., have read the above information / confirm that the above information has been explained to me in a language that I understand and I am aware of this document's contents. I have asked all questions that I wished to ask, and these have been answered to my satisfaction. I fully understand what is expected of me during the research.

I have not been pressurised in any way and I voluntarily agree to participate in the above-mentioned project.

.....	.....	.....
Participants signature	**Witness**	**Date**

Rhodes University, Research Office, Ethical Review
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