

Climate change adaptation mainstreaming in the planning instruments of two South African local municipalities

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Abstract

This article reflects on the role of urban planning in climate change adaptation and the role of planning instruments in facilitating the mainstreaming of climate change adaptation. An analytical framework is introduced to analyse primary spatial and integrated planning instruments in the City of Cape Town and Thulamela Local Municipality in South Africa, as comparative cases with core similarities and contextual differences. The findings are discussed in terms of where adaptation should be included throughout the planning process and the extent to which the cases have been able to mainstream climate change adaptation within their planning instruments. The findings show that local municipal plans and policies are recognising the impact of climate change on settlements and the role of planning in responding to these impacts. However, there is little evidence of addressing these long-term impacts through programmatic and coherent approaches using short- to medium-term planning instruments.

Keywords: climate change adaptation; mainstreaming; planning; spatial planning; integrated development planning

1. Introduction

Even though climate change is a global phenomenon, local government is the space where climate change is felt, through both short term events and long-term impacts, and where opportunities lie to address it (Sanchez-Rodriguez, 2009; Carmin et al., 2012; Chu et al., 2016). An important task is to integrate local knowledge and experiences into multi-disciplinary, multi-dimensional and multi-scale approaches that can better guide the configuration of adaptation responses to climate change and integrate them into development strategies and planning processes (Sanchez-Rodriguez, 2009). Adaptation in the traditional sense of incremental adaptation to avoid harm from climate change impacts is recently considered as only one part of the process to be resilient to the impacts of climate change (Kates et al., 2012; Ajibade and Adams, 2019).

Transformational adaptation would involve institutional changes in terms of urban planning to change both the approach to and management of risks and vulnerabilities (IPCC, 2018). The challenge in the governance and planning of local spaces is that it involves complex interactions between a diverse range of governmental and non-governmental role players and stakeholders (Oranje and Van Huyssteen, 2007), which is equally true for climate change adaptation. Therefore, adaptation and the process of mainstreaming should be considered part of the dynamics associated with society, and not just a technical process of adjustment by society, i.e. adaptation planning and mainstreaming should be considered as a socio-political process (Eriksen et al., 2015). For climate change to be meaningfully integrated or mainstreamed into planning instruments and to facilitate transformational adaptation, the status of planning and its role in building resilient cities and towns need to be raised. The International Panel on Climate Change (IPCC) (2018) recognises the role of urban planning as a central component of transformational adaptation to address the root causes of risk and

vulnerability, and argues that transformational adaptation involves behavioural and lifestyle changes, systemic change and new approaches to urban planning.

It is generally accepted that climate change agendas should be integrated with disaster risk reduction, service provision and development planning and that the instruments that facilitate these should reflect this integration (Picketts et al., 2014; Broto, 2014; Lethoko, 2016; Santhia et al., 2018). Sanchez-Rodriguez (2009, p. 203) argues that adaptation to climate change requires both bottom-up and top-down approaches to reduce vulnerability. Settlement planners could play a significant role in adaptation because of their influence in defining the form, structure, and function of settlements, but as it is, planning is currently playing a limited role in adaptation to climate change in some cities.

Local government functions such as infrastructure and services provision, infrastructure maintenance and integrated development planning can either facilitate adaptation or work against it. Efforts to address climate change is often neglected in favour of immediate development dilemmas (Pieterse et al., 2016; Broto, 2014; Faling et al., 2012), such as service delivery backlogs, and many local plans have short-term horizons that are in conflict with the long-term implications of climate change. In the South African context, Integrated Development Plans (IDP) and Spatial Development Frameworks (SDF) span over a horizon of five years, as they are often linked to budgeting periods. Somewhat contradictory to this, SDFs are required to have a long-term spatial vision and identify long-term risks of particular spatial patterns (Republic of South Africa, 2013). Ultimately, spatial planning and the instruments that guide it, are in support of long-term sustainable development despite administrative restrictions and contradictions of planning timeframes.

Municipalities in South Africa are faced with the requirement to do forward planning while facing the challenges of addressing backlogs in service delivery, fiscal constraints, capacity constraints and a lack of information or data. These challenges are even greater when coupled with climate change. However, because of the pressure on local government to expedite development to address inequalities and the somewhat uncertain future of climate change, adaptation is often one of a multitude of long-term context-dependent dilemmas that requires urgent attention by the planning profession, but is of less immediate concern (Biesbroek et al., 2009; Faling et al., 2012). This tension does not need to exist, for ‘good planning practices are, by nature, also climate-smart planning practices’ (UN-Habitat, 2014). Furthermore, spatial planning that integrates adaptation measures offers opportunities to protect cities against anticipated impacts of climate change, while simultaneously protecting past development gains as well as addressing the present development agenda.

This article explores the extent to which adaptation as a climate change response measure is currently mainstreamed into South African municipal planning instruments in the City of Cape Town, in the Western Cape Province, and Thulamela Local Municipality, a largely rural municipality in the Limpopo Province. An analytic framework is introduced to assess the extent of mainstreaming in planning instruments, which reflect on mainstreaming throughout the planning process. The analytic framework was developed in terms of the typical planning process and how mainstreaming should occur in this process to support programmatic planning for long-term impacts. This analytic framework can be applied to similar studies assessing planning instruments. The article presents findings from these two cases with very different contexts, but a similar goal: to mainstream climate change response into planning.

2. Methodology

A comparative case study design was used for this research. ‘Comparative case studies involve the analysis and synthesis of the similarities, differences and patterns across two or more cases that share a common focus or goal’ (Goodrick, 2014, p. 1). Such a design is typically used when there is a need to understand and explain how certain contextual factors and processes influence the success of an initiative. Content analysis was undertaken to explore the extent to which adaptation as a climate change response measure is currently mainstreamed into the core municipal planning instruments from the comparative cases. ‘Content analysis is an unobtrusive technique that allows researchers to analyse relatively unstructured data in view of the meanings, symbolic qualities, and expressive contents they have’ (Krippendorff, 2012, p. 44). The analytic procedure entails finding, selecting, assessing, and synthesising discourse-data contained in plans and policy documents. The analysis then produces data such as excerpts and quotations, organised into major themes.

The formally legislated planning instruments used by all municipalities for spatial and operational planning are IDPs and SDFs, as well as Built Environment Performance Plans (BEPPs) in the case of metropolitan municipalities. These planning instruments are linked to sectoral implementation plans and strategies, and financial mechanisms, and reflect the main spatial vision and strategy on a local level. Forming the basis of the content analysis, the planning instruments that were assessed in the Cape Town case included the Integrated Development Plan, 2017-2022; the Municipal Spatial Development Framework, 2018; and the Built Environment Performance Plan, 2018/19. The planning instruments assessed in the Thulamela case included the Integrated Development Plan, 2018/19; and the Spatial Development Framework, 2019-2023. The documents were reviewed and scored using an analytical framework.

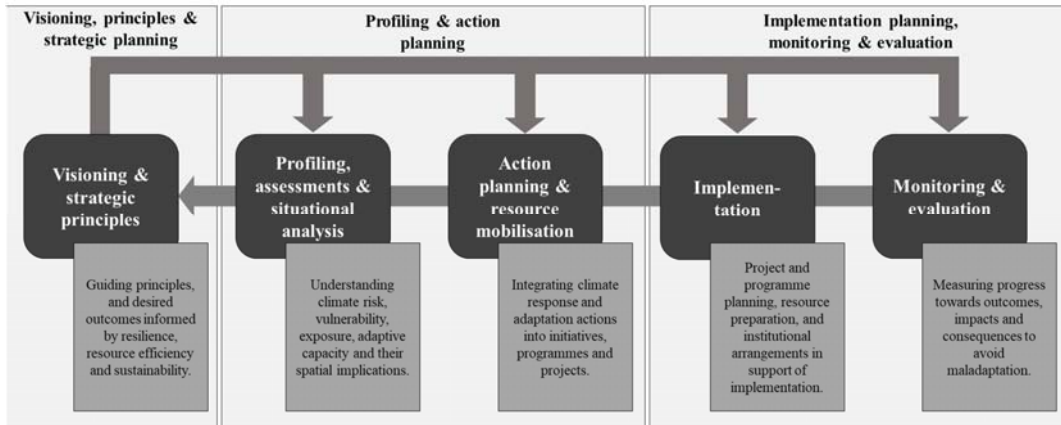


Figure 1. The relationship between the planning process and how climate response and adaptation is meant to be integrated throughout the planning process (adapted from UN-Habitat, 2007; C40 Cities, 2018).

Figure 1 illustrates the planning process and how climate change adaptation relates to it. The analytical framework is based on this diagram and is also informed by research that was recently commissioned by National Treasury’s Cities Support Programme (CSP) to develop tools to enable the mainstreaming of climate responsiveness into city planning, budgeting, and projects, focussing on metropolitan municipalities (National Treasury, 2018). Table 1 shows the analytical framework which is informed by eight criteria against which planning instruments can be assessed to determine the extent to which climate change adaptation is mainstreamed within them. Each of the key planning instruments were graded against the criteria on a three-point scale, where “3” indicates that the plan meets the criteria, “2” meets it in part, and “1” does not meet it at all.

Table 1. Analytical framework for assessing the extent to which climate change adaptation is mainstreamed into planning instruments (adapted from National Treasury, 2018).

Dimensions	Criteria
Visioning principles and strategic planning	Criterion 1: Informs or considers climate change response, resilience and/or sustainability in the guiding principles and strategies.
	Criterion 2: Articulates desired climate change response and/or adaptation goals and outcomes.
Profiling and action planning	Criterion 3: Identifies critical assets that are most at risk and/or exposed to climate impacts, including infrastructure and communities.
	Criterion 4: Identifies resources and/or ecological infrastructure to support climate change response and adaptation.
	Criterion 5: Contains actions or interventions that support climate change response goals and outcomes, i.e. climate change adaptation actions and measures.
Implementation planning, monitoring and evaluation (M&E)	Criterion 6: Earmarks additional investment or fiscal support for climate change response and/or adaptation.
	Criterion 7: Actions climate change response goals and outcomes through institutional arrangements.
	Criterion 8: Reflects climate change response goals and outcomes in an M&E framework.

3. Results and discussion

The City of Cape Town Metropolitan Municipality (hereafter Cape Town or the City) and Thulamela Local Municipality (hereafter Thulamela or the Municipality) were purposively selected given the following criteria; (1) the municipality must have developed a climate change response plan, or a similar plan, at either local municipal or district level, (2) the municipality must be recognised as having undertaken climate change adaptation mainstreaming into at least their IDP and/or SDF, and (3) there should be a clear champion (an individual or a department) within the municipality that drives climate change response and adaptation. The cases were selected because they met the criteria, but also because they were different from each other in terms of context. The cases were therefore comparable and broadly representative of similar municipalities in South Africa.

Cape Town is one of the earliest municipalities to place climate change adaptation and mainstreaming on the municipal agenda. The City is one of the main economic centres in the country and faces unique climate change issues such as drought, sea-level rise and wildfires. Currently, Cape Town has a population of close to

4 million, which is projected by the Green Book to increase to approximately 5.5 million by 2050 (Le Roux et al., 2019). The majority of this growth is likely to occur in already highly vulnerable areas (Le Roux et al., 2019). Cape Town and the surrounding region is facing extreme increases in drought tendencies and increasing water supply vulnerability (Le Roux et al., 2019). Considering these realities around inherent vulnerability, socio-economic inequalities, and current and future climate change impacts, the City has committed to building a resilient city through both adaptation and mitigation efforts, and in this regard support a number of international agreements and conventions either as a direct signatory or by supporting national commitments.

The City's climate change response journey started in 2001 when they developed and adopted an Integrated Metropolitan Environmental Plan (IMEP) along with its implementation strategy, which recognised the relationship between the natural and the built environment and the need for sustainable development (Mokwena, 2009). Under the IMEP a number of sectoral strategies were developed in support of meeting the commitments and principles as set out in the IMEP. The City adopted a City Development Strategy (CDS) in 2012 to provide a long-term vision and strategy for up to 2040, and since then all new and updated policies, plans and strategies have been developed in alignment with the vision and goals of the CDS. In 2017, the Environmental Strategy was adopted and replaced the previous IMEP to reflect the City's revised sustainability and development approach as provided through its CDS, IDP and SDF. The Environmental Strategy undertook to develop a climate change policy and a detailed strategy to provide a guiding framework to respond to climate change in the City, which was finalised later in 2017. With this policy, the City recognises that climate change is a cross-cutting area of work and requires a transversal approach. Climate change response is largely technically rooted in the City and has

been driven by the Environmental Management Department, which can also be seen as the policy-home for climate change adaptation in the City, but implementation happens across departments.

Thulamela is a largely rural municipality, with one urban centre, Thohoyandou. It is one of four municipalities in the Vhembe District in the Limpopo Province and currently has a population of over 460 000 which is projected by the Green Book to grow to around 570 000 by 2050, with over 230 000 people in Thohoyandou (Le Roux et al., 2019). The main contributing sectors to the local Gross Value Added (GVA) are government and community, social and personal services, and finance, insurance, real estate, and business services. Agriculture, forestry, and fisheries contribute 1.2% to the local GVA, however, there is also extensive subsistence and emerging agriculture in the area. Thohoyandou and the surrounding rural areas have seen increased frequency and severity of floods and increased high-temperature days (Musyoki et al., 2016).

Thulamela is part of a former Bantustan area and thus have large portions of land that are governed through Traditional Authorities. More than 60% of settled areas and close to 90% of the total land area in Thulamela are under traditional authority rule (Le Roux et al., 2019; Thulamela Local Municipality, 2019), limiting the influence and impact of the Municipality over land use and spatial planning.

Thulamela is supported through the Department of Environment, Forestry and Fisheries¹ (DEFF) Local Government Climate Change Support Programme (LGCCSP). Through the LGCCSP, DEFF together with the South African Local Government Association and the Department of Cooperative Governance and Traditional Affairs developed *Let's respond: a guide to integrating climate change risks and opportunities*

¹ Previously the Department of Environmental Affairs (DEA).

into municipal planning, also known as the Let's Respond Toolkit (LRT). The purpose of the LRT is to guide municipal practitioners through the necessary steps to integrate climate change responsiveness into the planning process, using the IDP. In 2012, the LRT was piloted in five municipalities across South Africa, one of these being Thulamela. Although Cape Town does benefit from the LGCCSP, the LRT has not been a focus in the City (Department of Environmental Affairs, 2014). It is important to note the LRT has not been rolled out to all municipalities and not in any of the metropolitan municipalities in the country (Department of Environmental Affairs, n.d.). Since 2012 Thulamela officials have received some technical training and support on climate change and climate change response. A climate response plan is available on the district level, but not on the municipal level. Vhembe District, through the support of LGCCSP, prepared a Climate Change Vulnerability Assessment and Response Plan in 2016, and Thulamela was involved in the process. Thulamela draws from this plan in compiling its IDP, as well as from the information compiled through the LRT during the pilot study. An Environmental Management Plan and a Disaster Management Plan are also in place at the local municipal level, as these are required through legislation. Climate change response falls under the auspice of the Community Services Department as the champion driving mainstreaming.

Below is a summary of the results of the content analysis in Table 2, which shows the scores for Cape Town's and Thulamela's planning instruments given the criteria in the analytical framework.

Table 2. Assessment of the extent of climate change adaptation mainstreaming in Cape Town and Thulamela’s planning instruments.

Dimension	Criteria	Cape Town			Thulamela	
		IDP	SDF	BEPP	IDP	SDF
Visioning principles and strategic planning	Criterion 1	3	3	2	1	3
	Criterion 2	2	3	1	1	2
	<i>Sub-total</i>	<i>5</i>	<i>6</i>	<i>3</i>	<i>2</i>	<i>5</i>
Profiling and action planning	Criterion 3	2	2	2	2	2
	Criterion 4	3	3	2	2	2
	Criterion 5	3	3	3	1	3
	<i>Sub-total</i>	<i>8</i>	<i>8</i>	<i>7</i>	<i>5</i>	<i>7</i>
Implementation planning, monitoring and evaluation (M&E)	Criterion 6	2	1	2	1	2
	Criterion 7	1	1	2	1	1
	Criterion 8	1	1	1	1	2
	<i>Sub-total</i>	<i>4</i>	<i>3</i>	<i>5</i>	<i>3</i>	<i>5</i>
Total score		17	17	15	10	17
Percentage (%)		71	71	63	42	71

Using the assessment framework, Cape Town’s IDP and SDF, as well as Thulamela’s SDF scored an average of 71 percent.. All three of the strategic planning documents assessed for Cape Town address climate change adaptation in some way. Climate responsiveness, resilience and resource efficiency were included in the overall strategy and informed the guiding principles and actions, but less so in the BEPP. The sections that were the least inclusive or responsive across all the plans considered for both cases, were those relating to institutional arrangements, and M&E. The discrepancy between the extent to which mainstreaming is occurring in terms of visioning and strategic principles, and implementation planning and M&E is supported by literature in that it has been found that principles of sustainability and resource efficiency are often promoted in guiding policies and frameworks, but this rarely translates into actions and implementation (Pieterse et al., 2016).

In the case of Thulamela, some strategic objectives are only mentioned near the end of the document, and the strategy of the IDP or its priority areas are not clearly articulated and followed through, making it difficult to determine how the strategy is informing planning and budgeting in the municipality. This is even more difficult when having to extract intentions regarding climate response and adaptation, and whether

these principles are carried through the planning process from strategy to budgeting and implementation. Overall, the SDF has integrated climate responsiveness and resilience to a good extent (scored 71%), while the IDP did not (scored 42%). The Thulamela SDF places considerable emphasis on the need for approaches and interventions that contribute to the realization of ‘ecological sustainability’ through energy efficiency and renewable energy. The SDF does however provide very clear and useful measures in support of resilience and adaptation in its Sustainability Policy, but how this, and much else of the SDF will be actioned, is not clear since very little information is provided on institutional arrangements.

The analysis underlying these results are discussed in terms of the three dimensions as per the analytical framework, including (1) visioning, principles and strategic planning, (2) profiling and action planning, and (3) implementation planning and monitoring.

3.1 Visioning, principles and strategic planning

Criteria 1 and 2 of the analytical framework assess how climate change adaptation is integrated into the vision, principles and strategic direction provided by planning instruments. The first step to integrating climate change response and adaptation is to recognise and prioritise it as part of the overall strategy and principles that guide all development within a municipality (Rauken, Mydske, & Winsvold, 2015; Santhia et al., 2018). In support of this, it is necessary to articulate specific goals and outcomes to realise the vision and strategy as drivers of transformation and impact.

In Cape Town the IDP (City of Cape Town, 2017) sets forth six guiding principles to guide strategic focus and implementation within the City, including; (1) resilience, (2) sustainability, (3) transformation of the built environment through transit-orientated development, (4) governance reform, (5) customer-centricity, and (6) a

transversal approach. The first two principles, although broadly defined, do include climate responsiveness in their interpretation. In the IDP, urban resilience and sustainability are considered as core factors in achieving its vision and strategic objectives of building a safe, caring, inclusive and well-run city that offers opportunities. The IDP also states that resilience, as a guiding principle, should be institutionalised across the organisation and be incorporated into the City's strategic planning and decision-making mechanisms. The IDP includes five strategic focus areas that inform all of the City's plans and policies and reflects the objectives, strategies and development priorities underpinning each focus area. Resource efficiency and resilience inform each of the focus areas. There are also objectives linked to each of the focus areas. Objectives related to climate response, adaptation and resilience are linked to the 'Opportunity City' focus area. 'Objective 1.4: Resource efficiency and security', is the only objective within this strategic focus areas that, in an obvious way, supports climate change adaptation and climate resilience. Under this objective, the City aims to 'achieve an appropriate balance between economic development and the preservation of the natural environment, optimising natural assets, securing resources, and creating a resource-efficient economy' (p.76). The City recognises that to achieve this, resilience will need to be institutionalised in the administration and citizenry. The formulation of the City's principles, strategic focus areas and objectives as captured in the IDP illustrates that climate change response, resilience and sustainability strongly informs the guiding principles and strategies of the City. However, the City does not necessarily articulate outcomes and goals of any kind in the IDP, although they are implied in the priority around resource-efficiency and security.

Within the executive summary of Cape Town's SDF (City of Cape Town, 2018a), the role of resource efficiency and climate-awareness in transforming the City's

spatial context is recognised, in particular that urban growth, be it formal or informal, should not undermine city-wide resilience. One of the three spatial strategies of the framework is to manage urban growth and create a balance between urban development and environmental protection, which is also considered in the IDP. For this, sub-strategies and land use policy guidelines are identified that will be used to manage and promote the main strategy. One specific sub-strategy is to protect citizens from risk areas through land-use management and spatial planning that will direct urban growth away from risk areas, discourage development in the current and future risk areas, reduce the impact of urban development on ecological infrastructure, and protect ecological infrastructure. The spatial strategies are intended to guide decision-making around development proposals and applications from the public as well as the private sector. The City communicates a clear spatial strategy through its SDF, and some of the key strategic directives are strongly in support of climate change adaptation and resilience. Each of the spatial strategies has a number of policy statements that are linked to actions to support the spatial outcomes and objectives associated with the SDF.

The Cape Town BEPP reflects the strategic principles and targets established in the IDP and SDF to an extent (City of Cape Town, 2018b). In all three of these strategic planning documents the importance of considering the impact of climate change on the City and its inhabitants are highlighted in the high-level vision and mission statements, as well as the need to mitigate these impacts. The vision of the IDP can also be found in the BEPP where climate change is mentioned as an important consideration. However, climate change response goals and outcomes are not clearly articulated in the BEPP despite these existing to some extent in both the IDP and SDF.

In Thulamela's IDP, strategic objectives are identified per key performance area, as well as development strategies which are then linked to a responsible department or agency (Thulamela Local Municipality, 2018a). These are provided near the end of the document. The strategic objectives are diverse in scale and detail, but are indicative that the Municipality intended to include climate responsiveness into the IDP. There are also a number of municipal priorities with associated goals. Those that relate to climate responsiveness and resilience, are disaster management provision, waste management, water supply, and environmental management. The strategic objectives, municipal priorities and goals appear disjointed from each other and suggest that the integration of climate response is occurring in an uncoordinated and non-strategic way. The SDF is much clearer in terms of the vision and principles, and reflects on climate change and implies that adaptation is needed. The SDF sets forth 12 development principles of which two are directly in support of climate change response, namely 'define and protect the municipal open space system' and 'optimise the utilisation of municipal natural environmental resources for tourism development'. The SDFs principles are either directly or indirectly in support of climate response, and are indicative of a spatial vision that considers climate change response and resilience in the guiding principles and strategies. Later in the SDF a Sustainability Policy is included which provides a range of outcomes that are directly related to climate change adaptation, but they do form part of the key performance areas as part of the vision and principles.

3.2 Profiling and action planning

Criteria 3, 4 and 5 of the analytic framework assess how climate change adaptation is integrated into the process of interpreting and developing responses to risk and vulnerability to develop and action responses to these. To integrate climate change response and adaptation into planning instruments it is necessary to understand climate

risk and vulnerabilities (Kunapo et al., 2018; Santhia et al., 2018; Pasquini et al., 2015). When the potential impact of climate change is recognised, the spaces and the infrastructure that are exposed to risk can be identified, as well as the assets that are able to support response and future resilience. This information and understanding will enable local municipalities to be able to manage, plan and respond effectively.

Cape Town has three programmes linked to their IDP's Objective 1.4. The programmes focus respectively on energy-efficiency, climate change adaptation and mitigation, and resilience. There are a number of projects under these programmes that reflect the City's commitment to better understand risk and vulnerability, particularly of vulnerable spaces and ecosystems such as coasts. The City also commits to minimising waste and recycling, and to develop a green infrastructure plan as a way to provide services and access to citizens in a more sustainable and resource-efficient manner.. The Cape Town IDP does not necessarily identify critical assets that are vulnerable to the impacts of climate change, but it does identify the need to do so.

The SDF identifies specific actions from its policy statements as part of its implementation plan, which are in support of the spatial outcomes and objectives. Among these actions are some that are specific to adaptation. Yet, the SDF does not contain a risk and vulnerability assessment specifically related to climate change impacts. Nevertheless, urban risk and vulnerability to the impacts of climate change are inherent to the framework. It is mentioned outright in the SDF that it should support a sustainable and resilient development pathway that informs all development decisions. Vulnerable populations are identified based on a socio-economic index used as a proxy for poverty, vulnerability, and areas of high need. The index has been spatialised, but communities most exposed to climate risk are not identified. The SDF, through its status quo analysis, alludes to the lack of adaptive capacity in certain areas due to poverty,

lack of access and unemployment, but how this is exacerbated during extreme climate events, is not addressed or acknowledged. However, one of the actions arising from the policy statements made in the SDF is to identify critical infrastructure at risk of damage and disruption as a result of climate-related impacts. The SDF identifies important natural areas or 'Critical Natural Asset areas', and highlights that these areas need to be protected because of the support services they provide and their role in building resilience. Additionally, development directives are identified based on environmental risk and social factors that may affect the development potential of certain sites and trigger additional legislative processes. Some of the development directives identified include the coastal edge, protected areas, wetlands, utility services buffers, safety zones, fire -, and flooding hazard areas, high potential or unique agricultural land, aquifers, heritage resources, parks and public open spaces, and infrastructure capacity. All the development directives identified by the SDF are either directly or indirectly in support of climate change response and adaptation. This indicates that the City considers it important to take account of high-risk and vulnerable areas in land-use management and spatial planning.

The SDF and the BEPP are closely aligned with regard to the spatial analysis, prioritisation of areas, and key projects identified. The BEPP also categorises informal settlements based on certain criteria of which exposure to risk is one, and propose specific approaches such as in-situ upgrading, re-blocking, and full relocation. The risks that are considered include flooding, fire, and being located in servitude areas, under power lines or in a protected biodiversity area. Including risk and exposure in the analysis of space will enable the City to be able to manage, plan and respond effectively to exposure and climate vulnerability. However, the fact that critical infrastructure, particularly the infrastructure that supports disaster response, is not considered in terms

of its exposure to climate risk, points to a gap in the City's understanding of their exposure and their ability to respond to disasters.

Thulamela's IDP has a sub-section dedicated to climate change. Here the major climate-related risks are mentioned, namely flooding, drought, and extreme heat. The IDP mentions that areas such as 'ecosystems, livelihoods, economic activities, infrastructures, and utilities as well as public health and safety' will be used as focus areas to mainstream climate change responsiveness (Thulamela Local Municipality, 2018a). Beyond these statements, there is no mention of the overall approach or agenda in the Municipality as it relates to climate change response or adaptation. Concerns around the vulnerability of certain infrastructure and assets are mentioned at random throughout the IDP. There is mention of poor road conditions that could hinder disaster risk preparedness, however, no specific roads that are particularly critical are identified. Also, the lack of proper stormwater drainage, ageing, and poorly maintained infrastructure is mentioned. High-level qualitative information is provided for air quality, water resources and some of the important ecological areas, all on the district level, and informed by the Vhembe Climate Change Vulnerability Assessment and Response Plan. However, no quantitative information is provided, nor is the vulnerable or at-risk areas and resources spatialised. The high-level qualitative information that is available to Thulamela through the District Response Plan is not appropriate or sufficient to be able to inform the IDP. Even though important ecological areas are mentioned under the Climate Change section of the IDP, the role of these areas or assets in supporting climate change response is not articulated. It can be assumed that these assets are mentioned in this section because there is some acknowledgement that they play a role in climate change response.

The SDF identifies a number of strategic proposals and projects to realise its principles. There are a number of notable proposals and projects identified that are in support of climate response and adaptation. They range from developing an Environmental Management Plan and an Integrated Open Space Framework, to conducting a wetland study and ensuring strict enforcement of land use management and development by-laws. The SDF fails to identify specific infrastructure that are at-risk and that are in support of climate change response. The SDF states that vulnerable ecosystems are to be protected by buffer zones, but the location of these areas are not identified. The SDF generally acknowledges the importance of ecological infrastructure throughout the plan, often prioritising conservation. However, the role of particular ecological infrastructure in reducing risk and increasing resilience is not explicitly stated.

3.3 Implementation planning, monitoring and evaluation

Criteria 6, 7 and 8 of the analytic framework assess how climate change adaptation is considered and integrated into implementation planning, monitoring and evaluation. An essential part of the planning process is implementation and ensuring that strategic outcomes were met in the process. The strategic priorities drive budgeting, expenditure and institutional mandates as important components of implementation. To assess impact, it is important to monitor implementation and to ensure that the findings inform future plans and activities.

As far as putting the necessary arrangements in place to support the implementation of the Cape Town IDP, with particular reference to climate adaptation, the Climate Change Policy is identified as the main instrument. The IDP states that ‘the City will work to ensure that climate change adaptation is integrated with all relevant decision-making processes, cutting across all line functions’ (City of Cape Town, 2017,

p. 78). However, no mention is made around dedicated funding for climate change adaptation initiatives, but considering the focus that has been placed on this, it can be assumed that it would receive notable fiscal support within the City. The 2018/19 Service Delivery and Budget Implementation Plan (SDBIP), which is linked to the IDP, indicates that 60% (just over R5 billion) of the capital budget is allocated to the Opportunity City strategic focus area (City of Cape Town, 2018c). Three objectives are covered under this portion of the budget where Objective 1.4 is allocated approximately R2 billion, which is the second largest budget proportion dedicated to a specific IDP objective. Dedicating such large portions of the capital budget to projects in support of energy efficiency, climate change and resilience are indicative of a serious commitment to creating a resilient city. Specific targets are set for certain indicators as part of the five-year corporate scorecard. Only two indicators measure aspects of Objective 1.4. The indicators measure percentage compliance with drinking-water quality standards and megawatts of new small-scale embedded generation. When considering the proportion of the budget allocated to this objective and the indicators that are related to it, the outcomes that are measured do not seem sufficient nor effective for evaluating climate response, adaptation or resilience.

The Cape Town SDF prioritises a number of implementation actions that are in support of the main goal of the SDF, spatial transformation through intensification. None of the prioritised implementation actions are directly climate-responsive or adaptive in nature. Given the way in which climate change responsiveness and resilience has been integrated into the main spatial strategies and directives of the SDF, the assumption is that these would be expected to inform and guide the prioritised implementation actions. The impact of climate change on urban processes is acknowledged, and efforts to increase resource efficiency and to reduce carbon

dependency is encouraged, but no reference is made of formal commitments to these efforts by the City.

Through the BEPP guidelines set out by National Treasury, it is required that targets be set for indicators that are reported by metropolitan municipalities themselves, and those reported from national sources. No indicator targets are required for climate responsiveness and resilience in the current BEPP. Many of the existing outcomes and output indicators already contain inherent climate response elements through the promotion of densification, adoption of low-carbon solutions and optimisation of natural infrastructure spaces. The BEPP states that the City has implemented a Transversal Management System (TMS) as a management approach to improve integration and coordination of service delivery and planning. The tool sits within the existing hierarchical structure but also provides additional platforms to facilitate communication and decision-making across directorates. The purpose of the TMS is to coordinate on issues that span across multiple departmental mandates. Climate change responsiveness and resilience is a cross-cutting issue, and even though not mentioned in the BEPP, one can expect that it would be one of the themes that will be included in the TMS. Although there is a monitoring component to the TMS, detail is not available in the BEPP.

For Thulamela, water demand and provision is highlighted as a challenge contributing to local vulnerability. The Municipality does not have the mandate to provide water or electricity as the service providers are Vhembe District Municipality and Eskom respectively. However, water management, water supply, and electricity supply are priority areas within the IDP and certain actions are identified such as to develop a water master plan, to refurbish water treatment plants and to upgrade sewage works. The IDP also states that current investment in maintenance of water

infrastructure is too low and maintenance programmes are falling behind. What is not clear from the IDP, is whether it is actually used to actively guide local investment and planning of water and energy services provision by the District and Eskom, or whether the IDP merely pays lip service to the intention of water and energy infrastructure investment and maintenance without having any impact thereon.

Most of the projects funded and managed by Thulamela through the Municipal Infrastructure Grant (MIG) are related to infrastructure such as roads, bridges, stormwater, and solid waste management (R141 million in 2018/19) (Thulamela Local Municipality, 2018b). These projects are in response to the challenges and vulnerabilities identified in the IDP, but it is not certain that the projects will be designed and implemented in a way that will reduce those vulnerabilities. There is no M&E framework in the IDP but it is captured in the SDBIP (Thulamela Local Municipality, 2018b). The M&E done as part of the SDBIP is focussed on short-term activities and not necessarily in support of measuring the impact over a medium or long-term. It is largely driven by budgeting and expenditure monitoring and therefore not able to monitor impact.

As part of the Thulamela SDF implementation plan, seven policies are developed, one being a Sustainability Policy that aims to facilitate sustainable utilisation and management of renewable and non-renewable natural resources to ensure minimal environmental impact from development. The Sustainability Policy makes detailed recommendations for buildings, sites and settlement-wide measures in support of climate response and resilience and offers adaptation actions that can be integrated into local spatial plans and projects. The SDF does not propose institutional arrangements as part of its implementation plan. Projects are identified in the Capital Expenditure Framework (CEF), as an annexure to the SDF, which will be prioritised for the next

planning cycle. The arrangements made through the CEF does not necessarily action climate change response goals and outcomes. The monitoring and evaluation component of the SDF is limited and few recommendations are made that are actually clear in terms of outcomes to be measured. One of three intermediate outcomes identified is ‘protecting the natural and built environment’ as part of a Results Based Management Framework, with ‘quality of the natural and built environment’ as one of six indicators. Part of the monitoring and evaluation framework are suggestions for qualitative and quantitative monitoring, through auditor assessments, community feedback sessions, and case studies of implemented projects.

4. Conclusion

The extent to which adaptation as a climate change response measure is mainstreamed into key municipal planning instruments was assessed using two South African case municipalities with divergent contexts. Currently, the planning reporting framework does not appear to facilitate climate-responsiveness and resilience through the indicators that South African local municipalities are expected to report on through their IDP, SDF and BEPP (National Treasury, 2018; Southworth, 2018; Stone, 2018). It is easier to report on activity rather than measuring outcomes related to climate response and adaptation (Tyler et al., 2016). Currently, planning instruments and related legislation do not explicitly require municipalities to consider and integrate climate-responsiveness and resilience into plans, strategies, decision-making, reporting, and evaluation. Principles of sustainability and resource efficiency are often promoted in guiding policies and frameworks, but this has been found to rarely translate into actions and implementation (Pieterse et al., 2016).

In the case of Cape Town, where climate change impacts, risk, and vulnerability has been informing planning responses for many years, climate change response,

adaptation and resilience can still not be considered fully mainstreamed into planning instruments. In the case of Thulamela, it is clear that climate change, risk, and vulnerability are considered important aspects to consider within planning instruments such as the IDP and the SDF, but that intentions to mainstream in meaningful and actionable ways have not been realised. Climate change response is being mainstreamed in a disjointed manner in their strategic planning documents, reflecting poor planning coordination.

Underlying the two cases is the importance of access to information and data related to climate change and impacts. In particular, information at the right spatial and temporal scale. Access to relevant information, as well as knowledge and skills to be able to interpret and mainstream information, is identified as a key enabler for climate change adaptation and mainstreaming (Pasquini et al., 2013; Ekstrom and Moser, 2014; Pasquini et al., 2015; Runhaar et al., 2018). Thulamela is dependent on risk and vulnerability analyses that were done on the district level, and which were largely qualitative in nature. In the Vhembe Climate Change Vulnerability Assessment and Response Plan, limited information is available on the impact of climate change and certain vulnerabilities on towns and cities and their functions and systems. Also, the spatial scale at which the assessment took place, makes much of the information irrelevant to Thulamela and its settlements. Thulamela has limited resources and capacity to conduct more detailed assessments and therefore rely on the district-level information. In contrast, Cape Town has detailed climate change projections and assessments available and are able to commission as well as to conduct in-house research on the impact of climate change on the City and to develop appropriate response plans. The significant role of information and data in being able to support the

process of integration into planning instruments is apparent from the analysis of the two cases.

This study highlighted the importance of integrating climate change response, adaptation and resilience into local planning instruments, and that good planning is by nature also in support of resilience. However, this study and other research (Runhaar et al., 2018; Uittenbroek et al., 2013; Santhia et al., 2018) show that local governments have not fully realised climate change adaptation mainstreaming. This study show that local municipal plans and policies are recognising the impact of climate change on urban spaces and the role of planning in responding to these impacts through intentions. What is not reflected, are programmatic and coherent approaches to addressing these long-term impacts through existing short- to medium-term planning instruments such as IDPs and SDFs.

Implementation planning for climate change adaptation projects and initiatives appeared weakest in terms of mainstreaming in the planning process. Further research is needed to explore the implementation of climate change adaptation projects and initiatives to provide a better understanding of the mainstreaming process and how to monitor such projects and evaluate impact. It would also be appropriate for research looking into actual implementation of climate change adaptation, to consider the dynamic social and political interactions between rules, resources and ideologies.

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