Original Research Paper

The role of local government greening policies in the transition towards nature-based cities

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A B S T R A C T

As urban areas increase in size, density and population, green spaces become increasingly important for sustainability and liveability. Yet urbanisation processes, compounded in many cases by climate change impacts, are placing increasing pressure on retention of urban vegetation. This paper aims to analyse the role of local government policies in provision of urban green spaces.

The research focuses on policies of three neighbouring local governments in Melbourne Australia, representing inner, middle and outer urban contexts. The paper applies Transition Management's four spheres, strategic, tactical, operational and reflexive, to structure the analysis.

The research identified key policy success factors and related these to the four spheres of analysis. The research found that a key limitation to a consistent or unified approach to green space provision is the 'splintered' or competing narratives that are applied to the functions, benefits and characteristics of urban green spaces. This fragmentation slows transition to nature-based cities.

1. Introduction

As cities increase in size, density and population, urban green spaces become increasingly important for sustainability and liveability. Yet urbanisation processes, compounded in many cases by climate change impacts, are placing increasing pressure on the retention of urban vegetation. Green spaces are essential elements in liveable, sustainable cities (WHO, 2016). While their aesthetic and recreational contributions have long been recognised, recent understandings have acknowledged green spaces' contributions towards 'nature-based solutions' to socio-environmental challenges (Cohen-Shacham et al., 2016). Notwithstanding international policy drivers, such as the UN's *Sustainable Development Goals* which includes a specific urban goal, *Goal 11 Sustainable Cities and Communities*, there are still significant challenges for incorporating green space policies into cities' policy agendas.

With growing urban populations, green space is under increasing pressure from urbanisation processes of expansion and densification (Artmann et al., 2019). While densification has been proposed in part to reduce pressure for urban expansion, provision of green space is a major challenge (Haaland and Konijnendijk van den Bosch, 2015). Green space has been seen as easily replaceable when it 'gets in the way' of new developments and new infrastructure. Urban planners must juggle a range of competing demands, including housing affordability, economic development and infrastructure provision (Colding, 2011), often with lack of guidance on balancing strategic priorities, or implementation targets. Matthews et al. (2015) argued that there are institutional barriers for planners to integrate green space, including "definitional ambiguity" related to 'green infrastructure', institutional unwillingness for innovation and 'path dependency' towards business-as-usual approaches.

Urban green space policy makers, both bureaucrats and elected officials, have called for more research to support the policy

making process and the integration of research findings into the policy evidence base (CES, 2013). In many cases, research on the functions, services and contributions of urban green space include calls for introduction of policies to protect and increase urban green spaces (including for example Kabisch et al., 2016; Mell, 2017; Scott and Lennon, 2016). However, urban green space policy perspectives have to date received significantly less research attention. Within the context of these urbanisation, environmental and research challenges, this research asks, how can local government policies contribute to retaining and expanding urban green spaces to support transitions towards nature-based cities?

This paper analyses the role of local government policies for urban green space provision as part of wider urban sustainability transitions, and identifies key policy success factors. Sustainability transitions are defined as systemic transformations in which new approaches to sustainable practices and forms emerge (Loorbach et al., 2017). The research focuses on Melbourne as a case study to explore how a large city facing a range of environmental and urbanisation challenges (Gulsrud et al., 2018), addresses urban green space provision. Melbourne is a city of more than 4.5 million people and the capital city of the state of Victoria, in south-eastern Australia. Metropolitan Melbourne is governed by 32 local governments and approaches to green space policies differ across these municipalities. While the central city municipality has achieved international recognition for its urban landscapes policy suite, many of the policies of Melbourne's other municipalities are considerably less well-developed. The research analyses the key policies within the domains of city and land use planning, climate change, and green space planning for three neighbouring local governments, Melbourne (here referring to the central city municipality), Moreland and Hume, that represent inner, middle and outer urban contexts respectively. 'Transition management', an approach to describing and analysing transformative governance processes (Loorbach et al., 2017), is applied to structure the analysis.

The next section provides an overview of Melbourne's multi-level government structure, and responsibilities for green space planning. Following this, the research methods and analysis framework are presented. The analysis highlights how the selected policies address green space provision. The paper concludes by discussing key policy success factors for green space provision.

2. Australian governments, policies and urban greening

2.1. Australia's system of government

Australia has three levels of government, federal, state and local. As a federation of states, the division of powers between federal and state governments is defined within the Australian constitution. Local governments lack recognition in the Australian constitution, and are subordinate and accountable to their state governments. Nonetheless, local government plays a pivotal role in Australia's democratic system, being the level of elected government 'closest to the people' (Dollery et al., 2015). In recent years, the range of services provided by local governments has expanded beyond the 'traditional' spheres of 'roads, rates and rubbish', to encompass a broader range of roles, including land use planning, community facilities and services, such as recreation and sports, health and family services, and economic development. The day-to-day management of much of Melbourne's urban green space is largely the domain of local government.

In addressing broader urban liveability issues beyond regulated requirements, some local governments have developed urban green space and climate change strategies. Local government environmental spending is now larger than that of state and federal governments (Dollery et al., 2015). Due to substantially different rates bases, local governments have markedly different financial capacities, and therefore different levels of services.

2.2. Green space functions and policy domains

Urban green spaces provide multiple functions and benefits for urban dwellers, and for urban processes. A range of terms for urban green spaces have arisen that reflect or reinforce different functional or management aspects. For example, 'urban forestry' arose from natural resource management and forestry origins to reflect the roles, functions and management of urban trees and streetside vegetation (Konijnendijk and Randrup, 2002). The 'green infrastructure' concept was proposed as a landscape approach to urban design, planning and management (Mell, 2017). Its key principles emphasise *multifunctionality*, *connectivity* and *ecological networks* of urban green spaces (Benedict and McMahon, 2006; Tzoulas et al., 2007), as well as integrated approaches to policy implementation (Lennon et al., 2017; Mell, 2017). More recently, 'nature-based solutions' has been proposed as "an umbrella concept that covers a whole range of ecosystem-related approaches all of which address societal challenges" (Cohen-Shacham et al., 2016).

This research uses the term *urban green space*: "any vegetated land or water with or adjoining an urban area" (Douglas et al., 2011). *Urban green space* includes green corridors, woods, parks gardens and playing fields, and even "derelict, vacant and contaminated land which has the potential to be transformed". This term has been selected because it is understood by both research and practice communities, and because it spans the range of concepts, terminology and research approaches.

Urban green spaces' functions and benefits include mental and physical health (Douglas et al., 2017; WHO, 2016) and social benefits (Fan et al., 2011; Maas et al., 2009). Research has identified links between proximity to green space and physical wellbeing as well as social cohesion (Villanueva et al., 2015), and strengthening emotional bonds to place and to community (Beatley and Newman, 2013). In addition to provision of biodiversity habitat (Ives et al., 2016; Le Roux et al., 2014), green spaces provide a range of environmental benefits (Fryd et al., 2011), including mitigating urban heat, managing stormwater quality and quantity (Coutts et al., 2013), air quality (Nowak et al., 2014) and acoustic insulation (Azkorra et al., 2015). Economic benefits include increased economic activity associated with attractive streetscapes (Rogers et al., 2012), and increased economic value of residential properties near urban green space (Swinbourne and Rosenwax, 2017), though the latter effect has also been associated with housing

unaffordability and social exclusion (Haase et al., 2017).

Green space policies have largely been restricted to land-use policy domains. Policies that address the wider range of green space functions encapsulated by nature-based solutions are more recent additions to public policy suites. With an increasing focus on climate change impacts, climate change policies are also recognising green spaces' roles and contributions (Pauleit et al., 2018).

2.3. Green space planning in Melbourne

Australian state governments are largely responsible for land use planning, each having its own planning system and associated statutory and procedural frameworks (Williams and Maginn, 2012). Local land-use decision-making functions are delegated to local governments. In Victoria, the State Government develops metropolitan-scale strategies for Melbourne, and defines the *Victorian Planning Provisions* (VPP). Each local government, of which there are 32 within Melbourne's metropolitan area, is then required to establish its own local planning provisions, which must be consistent with state level planning. Local governments are constrained by legislation in additional measures that can be included within their local planning schemes. Each local governments is also required to develop a *Council Plan* within the first 6 months following election. The *Council Plan* identifies the vision, goals, and associated outcomes that the elected Council seeks to achieve during its four year term.

As cities progressively work to incorporate green spaces in policy approaches (Lennon et al., 2017), and to mainstream nature-based solutions (Scott and Lennon, 2016), these shifts can be undertstood as sustainability transitions. Wolfram and Frantzeskaki (2016) characterised the emerging field of sustainability transitions research as "highly interdisciplinary", and highlighted the need for research that understands "cities as places shaped by and shaping interactions between multiple socio-technical and social-ecological systems". Sustainability transition theories have developed to analyse non-linear, long term processes of change towards sustainability and are explicitly normative (Patterson et al., 2016). While sustainability transition theories have to a large extent focused on socio-technical systems and energy transitions (van den Bergh et al., 2011), recent studies have applied sustainability transitions theories, particularly Transition Management to socio-institutional perspectives (Loorbach et al., 2017) and governance of social-ecological systems (Frantzeskaki and Tilie, 2014). Transition Management, which focuses on policy perspectives of sustainability transitions (Rotmans et al., 2001), provides the conceptual framework for this research. The application of elements from Transition Management provides a conceptual structure to analyse existing policy approaches (Loorbach, 2010), by highlighting potential for policies to extend and expand transition opportunities. The following section presents the research methods, and the application of Transition Management to the analysis.

3. Methods

The research focuses on the policies of the municipalities of Melbourne, Moreland and Hume. For the purposes of this research, the key policy domains of *city and land use planning; urban forests, street trees* or *biodiversity;* and *climate change* for each of the three municipalities were analysed to identify approaches to green space provision. While there are multiple policy domains associated with green spaces' functions that could potentially address green space provision, current policy approaches largely fall within these policy domains.

The policy analysis is structured to bring together policy perspectives (content and process) with transitions research using Transition Management's four spheres - strategic, tactical, operational and reflexive (Frantzeskaki and Tilie, 2014; Loorbach, 2010). Analysis of policy *content* identifies the goals, targets and agents (Vogel and Henstra, 2015); analysis of policy *process* includes examining how urban green space policies are identified as part of the policy agenda, knowledge transfer, policy learning (Vogel and Henstra, 2015), and researching policy makers' understandings of 'policy success'. The analysis framework (Table 1) provides a standardised approach to enable qualitative analysis of policies from different jurisdictions.

Data was drawn from policy documents (current to the start of 2017) and semi-structured interviews with local and state governments' elected officials and policy officers, and other stakeholders. Thirty-five interviews were undertaken. The participants were selected to reflect the range of sectors (or organisational departments), as well as from a range of positions within organisational hierarchies, as well as consultants and those working in community or non-government organisations. At least one participant from each group was sought. Interview data is covered by ethics approval, and interview participants' confidentiality is protected through the use of unique identifiers (for example *Policy officer 28*). Policy documents provided data related to policy content, while interviews provided insights on policy processes and on why and how particular policy content is included or excluded. The interview

Table 1
Policy analysis framework, adapted from Loorbach (2010) and (Frantzeskaki and Tilie, 2014).

Transition management spheres	Analysis elements
Strategic	Vision, objectives
	Green space goals, targets
Tactical	Supporting strategies
	Alliances, engagement
Operational	Delivery mechanisms
Reflexive	Monitoring, evaluation

questions aimed to explore policy officers' perspectives on the strategic, tactical, operational and reflexive elements of the policy process. Supplementary material, sourced through desktop study and referral from interview participants was used to elaborate where necessary. Observations at workshops and seminars provided additional insights into policy officers' concerns and areas of focus, as well as serving to triangulate findings.

The analysis utilised *directed content analysis* (Hsieh and Shannon, 2005), combined with *grounded theory* tools of coding, memo writing and categorising (Charmaz, 2014). Directed content analysis utilises existing theory to focus the analysis (Hsieh and Shannon, 2005). In grounded theory coding, the codes "emerge as you scrutinize your data and define meanings within it … Coding may take you into unforeseen areas and new research questions" (Charmaz, 2014). The combined approach allowed both initially pre-determined and emerging codes to be used (Creswell, 2014), and was selected to utilise existing theoretical knowledge on sustainability transitions (Transition Management, Loorbach, 2010), and extend the application to the context of urban green space policy.

The analysis of policy documents focused on how green space is defined and addressed within these policies, implementation mechanisms and associated commitment of funding and resources. The presence of analysis framework elements was identified for each policy and categorised into one of the four spheres of *strategic, tactical, organisational* and *reflexive*. Each policy was searched using keywords to identify coverage of the focus areas across the whole policy content. The keywords used were: *green space, green infrastructure, greening, forest, tree, natural, nature, green roof.*

The coding and analysis of interview data focused on what was said and how, as well as what was not said. The analysis framework directed attention to a focus on organisational approaches to green space policies, and highlighted the tensions and unevenness in policy adoption. As interview participants were drawn from a range of organisations and disciplines, they reflected the variety of approaches and values that they and their organisations applied to green space provision.

4. Results

This section presents an overview of each municipality and its land use planning, green space and climate change policies. Following this, the analysis of how the four spheres (strategic, tactical, operational and reflexive) are addressed in both policy content and process is presented.

4.1. Municipalities and policies

4.1.1. City of Melbourne
City of Melbourne (CoM) is the capital city municipality and covers the central business district as well as surrounding residential, commercial and industrial suburbs of inner Melbourne. It portrays itself as a 'global city', is a member of several global city networks, including the C40 cities network and the 100 Resilient Cities network. It highlights a range of international awards that it has received, including the *C40 city climate leadership award* for its urban landscapes climate adaptation program, a key element of which is its *Urban forest strategy*. The municipality's green space is diverse and unevenly distributed, with large parks circling the central city area, but other working class residential and industrial areas significantly lacking green space. As a result, CoM has instituted actions to address green space provision, including greening laneways in the central city and converting under-utilised road space in residential areas.

The *Council Plan* (CoM, 2013) sets out eight goals for the city including the 'eco-city' goal, which defines Council's role as providing the foundations for its community to be sustainable. It emphasises CoM's willingness to experiment and innovate, to "embrace the unfamiliar if it helps us achieve our ambitions". The Mayor's message refers to substantial expenditure for "protecting our city from extreme weather [and] future-proofing our iconic parks and gardens" (p. 7).

CoM's *Urban forest strategy* (CoM, 2012) is the key green space strategy. The *Urban forest strategy* identifies three significant challenges for the city: climate change, population growth and the urban heat island effect. The strategy emphasises the role of the urban forest in cooling the city. It highlights the challenges facing the urban forest in terms of drought and water restrictions, aging tree populations, and climate change. Reinforcing the political commitment to the strategy, the Mayor is quoted:

> "We often think of the trees as the lungs of our city, but they are also, in some ways, our heart and soul. The whole community owns our trees and our future trees… There are few political, budget or policy decisions that must deliver for people in 100 years. In politics, so much is driven by artificial three- or four-year election cycle. Not this plan. Our trees are too important" (p. 7).

Community engagement is highlighted to build support and stewardship for the municipality's urban forest. The municipality's 'community' encompasses "federal, state and local governments, leaseholders, champions and environmental sector leaders, research and educational institutions, artists, industry forums, businesses, schools and developers" (p. 56). The strategy references both academic research and other international urban forest strategies.

CoM's *Climate change adaptation strategy* (CoM, 2009) was partly funded by the federal government through its (now discontinued) *Local adaptation pathways program* (LAPP). This funding came with strict conditions on expenditure and outputs, including a requirement for the strategy to be developed by a consultant approved by the federal government. LAPP was criticised for producing adaptation plans that were "generic and not detailed enough to result in concrete action" (PC, 2012). While CoM's adaptation strategy was one of the first developed by a Victorian local government, reflecting CoM's 'leadership' or 'frontrunner' role within the local government sector (CoM, 2009), the strategy's content was constrained by federal government directives. It is technical and heavily focused on a risk management approach and while it identifies the key physical and environmental context, lacks explicit

engagement with or reference to the social and community elements of the municipality.

4.1.2. Moreland City Council

The City of Moreland is located directly north of the City of Melbourne. It spans established inner and middle suburbs and includes residential, commercial and industrial areas. It is experiencing densification, both in inner-urban areas and in brownfields (ex-industrial) sites. While the municipality contains substantial areas of green space, including beside waterways on its eastern and western boundaries, there are also areas significantly lacking access to public open space.

The Moreland City Council (MCC) *Council Plan* (MCC, 2013) aims to "strike the right balance between responsiveness to the needs and concerns of the community and financial responsibility" (Mayor's message, p. 2). There are five themes: People; Spaces and Places; Environmental Sustainability; Sustainable Economy; and Civic Leadership. The context within which the Plan has been developed includes demographic shifts (increased birth rate, increased life span, and an ageing population), ageing infrastructure, and changing urban form. "With higher density and smaller dwellings with diminished private space and amenity, there is a corresponding need for increased access to public open space and other community facilities. Council will continue to respond to this imperative" (p. 2). Two threads underpin MCC's approach, and the way that Councillors (elected officials) and staff represent Council's work: environmental leadership, and the necessity for collaboration and shared responsibility.

The key green space policy is the *Moreland street landscape strategy* (MCC, 2012). The strategy encompasses a vision, goals, objectives and actions, as well as appendices with technical design, planting guidelines and the tree removal policy. The strategy acknowledges that the tree population has declined due to "extended periods of below average rainfall, inadequate protection of trees during construction and reduced space due to urban consolidation" (p. 6), exacerbated by a lack of long term planning. The strategy includes an annual tree planting target, but there is a lack of resources for ongoing tree maintenance and an absence of tree inventory data (*Policy officer 28*). Rather than a focus on community *engagement* and *education* (CoM's strategy), MCC's strategy focuses on community *notification* and *consultation*.

MCC's climate change strategy, *Zero carbon evolution* strategy (MCC, 2014) opens with the vision for creating a "prosperous and resilient future for Moreland" (p. 3). It emphasises that "everyone will play an important part" (p. 4) reinforcing the recurring theme of partnership and shared responsibility. The strategy asks Moreland people to "respect and value Council's investment in street trees", as well as planting and tree care on public and private land.

4.1.3. Hume City Council

The City of Hume, directly north of Moreland, spans established suburbs, growth area residential developments and major industrial and commercial areas. The municipality's population is culturally diverse, with residents from more than 160 countries. The municipality includes areas of significant socio-economic disadvantage. Approximately 65 % of the municipality is rural land. There are also substantial areas of public open space, and conservation reserves that provide habitat to endangered species. As a result, Hume City Council (HCC) faces substantial challenges in managing its green spaces, including meeting the expectations of residents in new suburbs, addressing the needs of socio-economically disadvantaged communities, managing the interface between urban and rural, incorporating threatened species management into green space management, and allocating sufficient resources, both funding and staff, to these challenges.

HCC's *Council plan* (HCC, 2016) notes the challenge of "meeting our community's ever-changing needs and expectations" (p. 2). The Mayor's opening statement highlights the need for securing "sustained, long term investment from State and Federal Governments", and for partnerships with local agencies, businesses and community groups (p. 2), expressing pressures that many councils are experiencing due to reduced funding and increased expectations. The plan lists the top five short term and long term priorities, based on a survey of Hume residents (p. 32). *Traffic and parking management* is the top short term and long term priority. *Parks, gardens and natural environment* is the second-most important long term priority, but is not listed at all in the top five short term priorities. This presents challenges for Council in meeting community expectations, particularly as land must be reserved for public open space at the start of the development process. The *Council Plan* includes specific green space objectives and actions.

The *Land and biodiversity plan* is HCC's key green space plan (HCC, 2015). Its scope is broad, including the municipality's biodiversity, significant landscape features, cultural heritage sites and the urban forest, the latter defined as "trees in public open space, streetscapes and on private land" (p. 2). The plan identifies HCC's roles and responsibilities as "land owner and manager, a planning authority and a facilitator/provider of community support, education and capacity-building" (p. 2). The plan recognises threats to the urban forest that include development pressure, and climate change impacts.

HCC's *Climate change adaptation plan* (HCC, 2013) is framed around increasing the municipality's resilience to impacts. The plan takes a risk management approach, identifying more than 100 risks, categorised into five themes: "planning for future communities; infrastructure management; vulnerable communities; biodiversity and waterways; embedding climate change considerations into organisational processes" (p. 1). Actions are detailed in a separate action plan. Vegetation is seen as a victim of climate change risks and impacts, and not as a mitigation mechanism.

4.2. Addressing strategic, tactical, operational and reflexive elements

The analysis of policies and interview data from the three local governments (summarised in Table 2) highlighted the different approaches, as well as the key strengths and weaknesses in their policy approaches to green space provision. City of Melbourne's approach is characterised by an ambitious *leadership* role, and global recognition for its urban landscapes program. Moreland's approach is focused on *collaboration* between the Council and its residents, as well as with other levels of government. Hume's

Table 2
Policy analysis results.

	Strategic Vision, objectives	Goals, targets	Tactical Supporting strategies	Alliances, engagement	Operational Delivery mechanisms	Reflexive Monitoring, evaluation
CoM						
City planning	***	**	***	**	**	**
Green space	***	***	**	***	**	**
Climate change	0	0	**	*	*	0
MCC						
City planning	***	**	**	*	***	**
Green space	**	***	**	**	**	0
Climate change	***	**	**	**	**	0
HCC						
City planning	***	*	***	**	***	*
Green space	**	***	***	**	***	*
Climate change	***	0	***	**	**	*

⁰ -Not stated.
* Included but with little detail.
** Included, some detail.
*** Comprehensive coverage.

approach brings together *ambition and compromise* in the context of rapid urban growth. Utilising Transition Management's four spheres to direct the analysis brings a focus on how the policies contribute towards transition to sustainable cities, and highlights the variations in how each of the four spheres are addressed in policies. The main findings related to the four spheres are discussed in this section.

4.2.1. Strategic elements

Strategic elements focused on the inclusion of vision, objectives, goals and targets. These were largely well addressed by the strategies, reflecting the growing commitment to provision of urban green spaces and their multiple benefits. Leaders and policy champions were significant factors in the process of policy design and adoption. Several policy makers reflected on the important role that leaders and champions had, and without whom policies were less likely to have been initiated. Gibson et al. (2017) suggested that "such champions are only perceived to be influential if they are at a high-enough level in the bureaucracy" (p. 5). As such, a Mayoral term provides a valuable period to initiate and adopt key strategies, as well as shifting organisational culture and attitudes, that may extend well beyond the end of the Mayor's term (*Councillor 35*).

The 'authorising environment' and 'political capital', were referred to by policy makers in reference to negotiation processes for achieving policy endorsement. This reflected the potential 'political costs' associated with introducing new policies, and the necessity to build political support, both amongst the elected decision makers, as well as the electorate (*Policy officer 4*). de Haan and Rotmans (2018) argued that transformative actors are 'value-driven' and that 'shared value sets' are the basis of their alliances. In this research, green space champions were described as 'passionate', and their passion, when well-articulated and supported by organisational authority, provided the impetus to shift organisational practices:

> "She's got that presence … she's challenged our engineers as well, to look at what our standard practices are. She's challenged them to think of the green bit as another asset as well" (Policy officer 16).

Policy champions however need not necessarily occupy leadership roles. Policy officers may be strongly instrumental in the extent of implementation or enforcement of policies. Courage was identified as a factor to push successful implementation of policies:

> "It's all about two words in our planning scheme … I push the boundary – it says 'good design', that's what I use to strive for really good outcomes … it's challenging but you can do a lot with a couple of words … Somebody's got to be brave" (Policy officer 30).

Incorporating green spaces into cities is generally strongly supported; crafting the *strategic* elements of vision and goals is consistently the strongest element addressed in the policies analysed. The operationalization of these *strategic* visions, into *tactical*, *operational* and *reflexive* elements, is significantly more challenging, and was consistently less well addressed in the policies analysed.

4.2.2. Tactical elements

'Tactical' elements focused on community engagement and information provision, and building alliances and networks, as well as the necessity of working across departments and between different jurisdictions. Policy officers reflected on the importance of engagement to build and maintain political support, and to contribute to the positive 'political capital' required for endorsement and implementation of green space policies, in the competition for inclusion in the government's policy agenda (*Ministerial advisory group member 7, Policy officer 21, Councillor 26*).

Integration between policies, within the organisation's different policy domains and with other levels of government, strengthened implementation. Conversely, the lack of cross-referencing between urban forest strategies and local planning schemes significantly diminishes the authority and coverage of urban forest strategies (Phelan et al., 2018). Policy integration also contributes to

linking policy makers from different policy domains and levels of government, which builds policy 'ownership' and implementation. However, when there are multiple politicians and bureaucrats involved in addressing an issue that crosses policy domains, there may be significant competition for political 'territory' or control, which in turn may detract from addressing the issue itself (*Policy officer 27*).

Community engagement is approached in markedly different ways by the jurisdictions analysed. To be effective, engagement requires careful framing, skilled staff, organisational allocation of resources and ongoing commitment (*Policy officer 23*).

> "We can't send somebody out to go and talk to the community who is not skilled in community engagement. So everyone in my team is trained" (Policy officer 21).

It also requires accepting "complaints and uncomfortable moments" (*Policy officer 21*). Community engagement may contribute to more engaged stewardship of the urban forest, shifting from the singular concern for the tree outside a resident's house (*Policy officer 21*) or the parochial concerns of friends groups and community groups (*Ministerial advisory group member 7*), to a broader perspective of shared endeavour for the urban forest. An engaged community also underpins Councillors' support for policy approaches, spanning electoral cycles (*Policy officer 21*). The policies themselves, when clearly framed, contribute to communication efforts (*Councillors 30, 35*). Alternatively, lack of investment of staff time and resources in community engagement may be a contributing factor in community complaints and disengagement (*Policy officer 28*), and in addition may create an unbalanced perception of community attitudes:

> "People do ring up and complain … Nobody's ever ringing with praise … council officers get a few phone calls a week or a month that can overblow the perception that actually the public don't like trees" (Policy officer 21).

While there is a lack of formalised networks of green space managers, officers informally collaborate and share information through seminars and toolkits (*Policy officers 21, 22, 23, 33*), and Councillors were guided by neighbouring councils' strategies (*Councillor 26*). CoM officers actively sought out relevant international research and policy developments (*Policy officer 21, 23*), reflecting the municipality's engagement with multiple global urban networks. However, other municipalities' policy makers reflected on expectations for *local* evidence, rejecting interstate or overseas experiences as irrelevant to their specific local context (*Policy officer 29, Councillor 35*), and constraining the potential for learning from other jurisdictions (*Policy officers 28, 32*).

4.2.3. Operational elements

The operational elements included provision of resources (financial and non-financial), skills and capacity, and utilising a range of different policy mechanisms or instruments (for example both regulations and incentives). Willingness to try new ideas and experimentation were identified in some policies and by some policy makers (*Policy officers 21, 33*), but contrasted with resistance to adopting new practices and the inertia of status quo or 'business-as-usual' approaches in other contexts (*Policy officers 11, 28*).

Many local government officers in sustainability-focused departments were willing to trial new approaches, particularly with availability of external grants funding. However, there was also evidence of the difficulty of translating strategic visions to practical implementation, and resistance to internalising strategic objectives into the day-to-day organisational practices, exacerbated by resource constraints. For example, one municipality's parks were not watered in summer to reduce additional mowing requirements, which however severely reduced the parks' aesthetic, recreational and cooling contributions (*Policy officer 28*).

Policy officers highlighted the challenges associated with implementing new policies if there was not an associated allocation of ongoing funding. While one-off 'capital expenditure' grants allowed establishment of green spaces, ongoing maintenance costs were then expected to be absorbed into existing operational budgets. Some officers highlighted concerns about accepting grants for new projects, due to the necessity for absorbing ongoing maintenance costs, and to increasing community expectations associated with newly created green spaces (*Policy officers 13, 28*). Borgström et al. (2016) found analagous concerns in short-term, project-based ecological restoration funding in Sweden.

Maintenance requirements for multifunctional green spaces in some jurisdictions are not yet well developed, with gaps in both skills (people) and techniques (processes). Existing management practices tend to be either single-function focused, for example mowing grassed areas (*Policy officer 28*); or even completely lacking, with an expectation that green infrastructure will 'look after itself' (*Community group member 18*) once it has been installed, even in harsh locations such as roadsides. These unrealistic expectations, particularly where green spaces are meeting multiple, dynamic functions, risk failure or less-than-expected performance for nature-based innovations (Nesshöver et al., 2017).

4.2.4. Reflexive elements

Reflexive elements, including monitoring and evaluation, are required to assess the effectiveness of the policy and its implementation, enabling policy learning, and identifying changes to policy mechanisms (Connop et al., 2016). Reflexive elements are the weakest of the elements analysed. Beyond the reporting required for organisational accountability, evaluation is not prioritised. Annual reporting often focuses only on the successful implementation measures, "the good news stories" (*Policy officers 29, 34*).

Many of the policies analysed in this research included a general requirement for monitoring and measurement, but lacked defined baselines, data sets or key indicators against which progress can be tracked. A significant need across all jurisdictions is for the development of easily applied green space indicators to support ongoing monitoring and evaluation by governments. However, the existence of indicators will obviously not ensure improved reflexive practices, unless they are accompanied by an organisational commitment to evaluation.

The fear amongst government officers and politicians of criticism and public exposure of failure was highlighted as contributing to
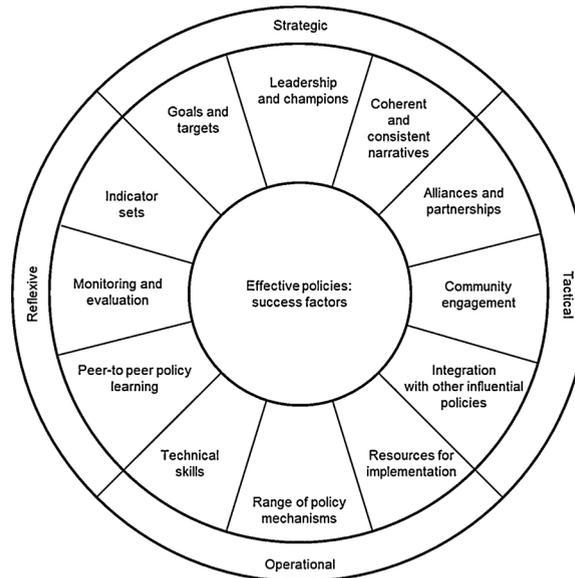
Fig. 1. Policy success factors (Source: author).

a risk-averse organisational culture, with reduced appetite for experimentation and for the reporting of the less-than-successful projects or techniques (*Policy maker 27*). This fear of failure and of bad publicity inhibits both experimentation and evaluation. This is exacerbated by short timeframes for assessing the success of installations and innovations, associated with financial year reporting and electoral cycles, which have little relationship with the requirements for establishment of living systems, ecosystem functions and nature-based solutions.

5. Discussion

The analysis has highlighted key elements which contribute to policy 'success', success being demonstrated through policy endorsement and implementation. Policy success differs between jurisdictions, but a number of common factors were identified. Together, the key success factors, associated with *strategic*, *tactical*, *organisational* and *reflexive* spheres, increase the likelihood of policy success (Fig. 1).

Policy success is necessarily underpinned by multiple forms of evidence (Head, 2008), by multiple policy participants adopting different roles (de Haan and Rotmans, 2018) and by narratives that can encapsulate a clear vision (Frantzeskaki, 2019; Luederitz et al., 2016). Conversely, the lack of some or all of these factors hampers policy success. For all jurisdictions analysed, there appeared to be a significant gap between the strategic ambition and the subsequent operational aspects of implementation, consistent with other research that found that implementation can diverge significantly from policies' high level goals, objectives and ambitions (Raynor et al., 2017).

Green spaces' multifunctionality is almost universally acknowledged in strategic visions and high-level statements. However beyond the high-level statements, there is an absence of shared or overarching narrative; the 'splintered narratives' reflect inward-facing competition between advocates of green spaces' different functions and ecological composition (*Policy officer 15, Community group member 18*). Policy makers frequently prioritised single functions that are the focus of their disciplinary fields, to the exclusion of other functions and forms. Examples of potentially competing ecosystem services include local climate regulation, recreation, biodiversity and carbon storage (Dobbs et al., 2014), or more broadly between social and environmental priorities (Haase et al., 2017). This results in diffusion of communication and engagement efforts, and unclear, conflicting and competing framings between different policy domains. This splintering extends to the stakeholders, peak associations and community groups involved in green space planning and management (*Ministerial advisor 17, Community group member 18*). It leads to competition between the proponents and their respective priorities: rather than advocating together for increased quantity and quality of urban green spaces, efforts are spent arguing for planting of native (for biodiversity) versus exotic (for shade) species, or for tree planting (for increased canopy cover) versus native grassland conservation (for threatened species conservation).

"It's interesting there are so few people who spring to mind as being able to talk about urban landscapes and urban nature – it seems that everyone has a particular barrow to push" (Ministerial advisory group member 7).

Framing divergent views as incompatible or opposing seeks to reduce the complexity of urban green space systems to simplified management prescriptions and visions of urban nature. Emphasising a dichotomy of opposing views ignores the spectrum that connects the two extremes, and seeks to shut down, rather than open up dialogue, debate and the possibility for creating more nuanced or complex understandings.

6. Conclusions

This research analysed policy approaches of three neighbouring Melbourne local governments, to examine their roles in retaining and maximising urban green spaces. The application of Transition Management to policy analysis enabled a focus on the socio-institutional perspectives of urban sustainability transitions. Local government policies play a substantial role in urban green space provision. Local governments have demonstrated increasing understanding of and commitment to green space provision for creating sustainable and liveable cities, through ambitious strategic statements, goals and objectives. However, policy implementation is hampered or constrained by a range of factors, including lack of resources and skills. Further, the evaluation of policies is not well addressed, with a lack of processes and indicators. In many cases it appears that, beyond annual reporting required for accountability, evaluation is not undertaken. In addition, due to the multiple policy domains and stakeholders that address urban green space provision, there is significant potential for contradictory or inconsistent policies both within jurisdictions, between neighbouring jurisdictions and across multi-level urban governments.

Key policy success factors were identified across Transition Management's *strategic, tactical, operationald and reflexive* spheres. The research highlighted the negative influence from competing and 'splintered' narratives for provision of urban green spaces, related to the wide range of functions, benefits and services that green spaces and ecosystems provide. Green space narratives reflect the complexity and uncertainty of overlapping usages, meanings, functions and processes, and the challenges that arise in addressing multifunctional, complex systems within monofunctional policy and management structures.

There is a growing literature on local and city-scale approaches to transitions to nature-based cities (including Frantzeskaki, 2019; Frantzeskaki and Tilie, 2014; Kabisch et al., 2016). Metropolitan Melbourne provides a case study of how different local governments approach policies for shaping green space across a large and diverse city facing a range of environmental and urbanisation challenges. Ambitious leadership (explicit in the case of City of Melbourne, implicit for Hume), and collaborations (Moreland) characterise Melbourne's local government approaches, yet competition between policy domains, and between green space functions present continuing challenges.

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