



Norwegian University of Life Sciences
Faculty of Landscape and Society
School of Landscape Architecture

Philosophiae Doctor (PhD)
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Public green space management arrangements in Norway Perspectives on quality green space

Offentlig grøntanleggsforvaltning i Norge
Perspektiver på kvalitet i grøntanlegg

Claudia Fongar

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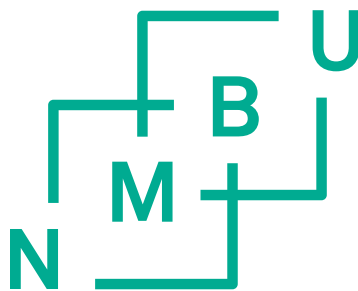
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*the municipality that is us..
if we do not do something who else will.*

-Interviewee

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SUMMARY

Threats such as urbanisation and climate change are addressed through the use of nature, with an emphasis on creating quality green spaces. Green spaces consist of a dynamic system that needs to be managed to make sure that its quality is ensured from a long-term perspective. However, there has been relatively little discussion about what quality entails and how quality might be translated into local management processes. Although, politicians might acknowledge benefits and services provided by quality green space, the attention given to quality green space does not correlate with the actual resources made available for managing them. In practice, the processes through which quality green spaces are enhanced, maintained and managed over the long term face many challenges. In this thesis, Norwegian green space management arrangements and the keeping of quality green space was explored. Making use of the Policy Arrangement Approach as overall theoretical framework, this thesis research utilised a mixed-method design, including both a quantitative and a qualitative strand. The first part of the quantitative strand characterised Norwegian green space management arrangements and the second part searched for the relation of Norwegian users' quality perceptions and motivation to green space visits. The quantitative strand informed the qualitative strand, deepening the understanding of an initiative-based green space management arrangement in a case study approach. The synthesis of both strands findings revealed that merging planning and operations in tactical operational performances as well as open for decision-making based on the operational level were valuable strategies to keeping quality green space. The possibility to engage in such strategic performances relates in part to the organisational structure of the municipality and in part to a strong green space unit, uniting decision-making upon all green spaces in the municipality. Nevertheless, the relation to and the importance of the green space manager were repeatedly highlighted. The prioritisation and operationalisation of overall political aims as well as tactical performances seem to depend upon individuals within the organisation. Adapted practices and processes of management within the given organisational structures ensure quality green space in a long-term, considering five stories; (i) identify the bonds to the place for activating the local engagement; (ii) allow for the unforeseen – maybe even take a risk; (iii) find synergies between stakeholders,

(iv) think in long-terms, and (v) as a management organisation – be actively engaged too.

Following the development of quality from the early concept of quality, quality in evaluations and tools, quality as values and quality as abstracted. This thesis found that quality is not something to be pinpointed, is rather a space of thematising what quality ought to be in the specific green space and green space management arrangement.

SAMMENDRAG

Trusler som urbanisering og klimaendringer håndteres gjennom bruk av naturen. Det legges spesielt vekt på å skape grøntområder av høy kvalitet. Grøntområder er dynamiske systemer som må forvaltes for å sikre god kvalitet i et langsiktig perspektiv. Det har imidlertid vært relativt lite diskusjon om hva kvalitet innebærer og hvordan kvalitet kan oversettes til lokale forvaltningsprosesser. Selv om politikere anerkjenner fordelene ved grøntområder med god kvalitet er det ikke direkte sammenheng mellom oppmerksomheten rundt grøntområder og de faktiske ressursene som gjøres tilgjengelige for å forvalte dem. I praksis er det mange utfordringer i prosessene der grøntområder vedlikeholdes, forbedres og forvaltes på lang sikt. I denne avhandlingen er grøntanleggsforvaltningen i Norge og den langsiktige utviklingen av grøntanlegg utforsket. Ved å benytte 'Policy Arrangement Approach' som et overgripende teoretisk rammeverk er denne avhandlingen basert på en blanding av metoder, en kvantitativ tråd og en kvalitativ tråd. Den første delen av den kvantitative tråden undersøkte hva som er karakteristisk for norsk grøntanleggsforvaltning. Den andre delen søkte etter sammenhengen mellom norske brukeres kvalitetsoppfatning og motivasjon til å besøke grøntanlegg. Den kvantitative tråden informerte den kvalitative tråden, som gikk ut på å utdype forståelsen av initiativbasert forvaltning av et grøntområde gjennom en case-studie. Syntese av funnene fra begge trådene viste at sammenslåing av planlegging og drift i taktisk operasjonell utførelse samt åpning for beslutningstaking på operasjonelt nivå, var verdifulle strategier for å utvikle grøntområder med god kvalitet. Muligheten for å engasjere seg i denne formen for strategisk utførelse avhenger i stor grad av kommunens organisasjonsstruktur. En sterk enhet for grøntanleggsforvaltning som forener beslutningsprosesser for alle grøntområder i kommunen er fordelaktig. Likevel ble betydningen av grøntanleggsforvalteren og dennes relasjoner gjentatte ganger fremhevet. Prioritering og iverksettelse av overordnede politiske mål samt taktiske utførelse i grøntområder synes å avhenge av interesserte enkeltpersoner i organisasjonen. Innenfor de gitte organisatoriske strukturene i forvaltningen kan tilpasset praksis og prosesser sikre god kvalitet i grøntområder på lang sikt når man tar hensyn til fem historier; (i) identifisere bånd til stedet for å aktivere lokalt engasjement, (ii) tillate det uforutsette – kanskje til og med ta en risiko, (iii) finne synergier mellom

interessenter, (iv) tenke langsiktig og (v) som en forvaltningsorganisasjon – være aktivt engasjert.

Denne avhandlingen viser at når man følger begrepet kvalitet fra de tidlige konseptene om kvalitet, kvalitet i evalueringer og verktøy til kvalitet som verdier og kvalitet som abstrahert, er kvalitet ikke noe presist. Det er snarere et rom for å tematisere hva kvalitet burde være i det enkelte grøntanlegg og i organiseringen av grøntanleggsforvaltning

PROLOGUE

Five minutes from the centre of Oslo, in the depths of a valley, lies a wooded green space. On the hillsides to the north and south, the space is bordered by apartment buildings and detached houses. To the west, a former industrial site has been transformed into a newly developed residential area. The river emerges from an underground pipe below the residential area, into an open, grassy space. A path and the river lead to a forest where the trees have mostly been allowed to grow wild. The forest consists of stands of mature pines, together with deciduous and broadleaf species, as well as marshy and swampy areas. Fallen spruce, pine and other trees in all stages of decomposition provide a habitat for many species, some of whom are red-listed, including fungi, birds and the freshwater pearl mussel. The western and eastern sides, intersected by a railroad and a major road, have been linked by a boardwalk. The walkway offers spectacular views of moss-grown slopes, a waterfall and a derelict building on the riverbank. The boardwalk eventually becomes a bridge in a culvert passing under the railroad and the road, its walls disfigured by graffiti. When it emerges, the path re-enters the forest, following the river further upstream and through the forest to another open, grassy area at the eastern end, where the water and field seem to merge with the buildings. Following its natural paths once again after fifty years underground, the Alna traverses the valley. For the residents, the interweaving of the trees and river creates an oasis, a secret space, a green lung.

Between the apartment buildings and surrounded by smaller roads, an uncultivated grass field was rehabilitated into a recreational green space that prevents flooding and enhances the neighbourhood. This space offers a variety of possibilities, from sunbathing on the newly established grass areas to games on a basketball court or the sandy verge of a pond, and cultural events in the open-air theatre with its small amphitheatre-style seating space. The river runs through fields, under bridges, and alongside flowerbeds, ending in a pond that eventually leads the stream back underground, below the streets. Several newly planted patches of woodland and single trees are maturing throughout the space, and small bushes and water plants are sprouting along the banks of the stream. Residents and visitors can walk along the paths, traversing the valley to the houses on either side.

Two urban green spaces have been described: one more natural, one recently constructed; one is perceived as an oasis and the other seems to be used for getting from one side of the valley to the other. One had time to mature and one is only just established. Places change and develop over time; they are not static. Priorities and needs change for activities and people; the maturing of trees, the infrastructure elements, and the use variations at times of the day and season all play a role. This varying context influences management practices (Burton et al., 2014). Green spaces are also infused with values leading to their transformation from spaces to places for individuals. The attachment of value to places makes them unique (Spijker and Parra, 2018). Places underlie temporal and spatial processes in which the socio-cultural and symbolic values of people are interwoven. Such values of place influence people's perception of quality. How do we manage diverse spaces to be valued and enjoyed by people from a long-term perspective?

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PAPER II

Fongar, C.; Aamodt, G.; Randrup, T.B.; Solfeld, I. Does Perceived Green Space Quality Matter? Linking Norwegian Adult Perspectives on Perceived Quality to Motivation and Frequency of Visits. *International journal of environmental research and public health* **2019**, *16*, 2327.

PAPER III (submitted)

Fongar, C.; Randrup, T.B.; Solfeld, I.; How to unite multiple perceptions of quality public green space. The creation of a place through local engagement. *Norwegian Journal of Geography* (submitted 07.2020)

APPENDICES

Appendix I: Literature review on Norwegian green space management

Appendix II: Manager survey questions

Appendix III: User survey questions

Appendix IV: Interview guides: Public organisation and organised user groups & unorganised users

1 INTRODUCTION

The prologue illuminates the complexity of public green space management. Public places are a complex interplay of a green, blue, brown and grey spaces its users and its management (Haase et al., 2020). Green spaces consist of a dynamic system that needs to be managed to make sure that their quality is ensured from a long-term perspective (Dempsey et al., 2014). This research project investigated the concept of quality in Norwegian public green space management arrangements. It sought to provide insights into the characteristics of municipal management that preserve the quality of green spaces and examined the use of these spaces based on citizens' perceptions of quality of spaces. Greater knowledge of quality, the processes that preserve the quality of green spaces and citizens' perceptions of quality is important for several reasons.

Threats such as urbanisation and climate change are addressed through the use of nature, with an emphasis on creating quality green spaces, as outlined in e.g. the *New Urban Agenda* (United Nations General Assembly, 2016) and the *Agenda on physical health* (WHO 2018). Green spaces contribute positively to people's mental and physical health and aid social cohesion (Peters et al., 2010; Astell-Burt et al., 2013; Kothencz et al., 2017; Tsai et al., 2020). The relations between health and green space is reported in several international review reports e.g. (WHO, 2017), which also serve as an example of cultural ecosystem services. It is also well known that green spaces contribute to providing numerous other ecosystem services (MEA, 2005) as they are widely known to for example moderate climate, encourage more environmentally friendly behaviour (Alcock et al., 2020) and absorb carbon (Townsend - Small and Czimczik, 2010). Quality green space together with the services and benefits they provide, is thus significantly tied to urban policy and planning goals (KMD, 2016; WHO, 2018). These efforts reveal an increasing awareness of the multidimensionality of green space, facilitating an enhanced understanding of the role of urban environments, the accessibility and quality of public spaces (Carmona et al., 2008; Jansson and Randrup, 2020).

However, there has been relatively little discussion about what quality entails and how quality might be translated into local management processes. Quality is something desirable and something to strive for (Dahler-Larsen, 2008). An abundance of conflicting interpretations and multiple layers of the meaning of quality exist, based on

a positive connotation of quality. In practice, the various definitions and perceptions describing quality green space are debatable. Nevertheless, the term 'quality' appears repeatedly in divergent settings of green space management, for example on a policy level, in planning and strategies as described, but also in descriptions of green space maintenance and composite measures describing quality in these spaces. Descriptions of quality in "models" are often defining quality in technical and operational oriented standards. Such standards shape the understanding of quality as an instrument for maintaining tasks (Lindholm et al., 2015b). Composite measures describe the quality of green spaces through a variety of properties included in the index, where overall quality is measured through the combination of properties, as for example Van Herzele and Wiedemann (2003); Giles-Corti et al. (2005); Dempsey (2008) and Ries et al. (2009).

Although, politicians might acknowledge benefits and services provided by quality green space, the attention given to quality green space does not correlate with the actual resources made available for managing them (Randrup et al., 2020). In practice, the processes through which quality green spaces are enhanced, maintained and managed over the long term face many challenges. The term management is in itself ambiguous, and several attempts have been made to describe and summarise management for green spaces. For instance by Jansson and Lindgren (2012) and Salbitano et al. (2016), describing management as a dynamic process of integrating economic, ecological, political and social aspects in a long-term perspective. If dynamic systems such as green spaces are only maintained, they will gradually degenerate (Randrup and Persson, 2009; Burton et al., 2014). And yet, the value of long-term management is often underestimated in Norway (Randrup and Persson, 2009). Taking these aspects into consideration, Dempsey et al. (2014) operationalise management in the concept of place-keeping. The authors consider six dimensions, namely funding, policy, evaluations, design and management, governance and partnerships that can create and enabling environment, arguing that a well-coordinated place-keeping process can potentially retain the quality of green space over the long term. Randrup & Persson (2009) promote a strategic green space management approach in which political, tactical and operational spheres should all be considered within the management process. Utilising the dimensions for an enabling environment, studies of the status of green space management have been carried out in England and Sweden. The state of UK

parks reports an ongoing reduction of budgets and staff whilst visits to parks and local partnerships are increasing. The UK report also reveals that the condition of parks has reached a point from where parks are now heading into recession (Neal and Community First Partnership, 2016). In Sweden, green space managers' report that budgets are not sufficient for the upkeep of the quality of green spaces, that green space numbers are expected to increase, and that most managers do not have strategic plans for long-term management (Randrup et al., 2017).

Holistic assessments of Norwegian municipal green space management are, to my knowledge, virtually non-existent. One exception is a survey sent to Norwegian municipal managers (Durucz, 2014). The survey revealed that budgets for investments are much higher than those for upkeep, and that weak municipal budgets have direct negative consequences for green space budgets. The green sector is downgraded compared to other sectors and politicians lack an understanding of the importance of the green resource. Planning is short-sighted and overall policy agendas are not offering specifics to convince managers to act on them (Durucz, 2014). The steering system is complex and responsibilities for the management of the green resource are spread throughout the municipality. Resources for management are supplied from different departments within the same municipality, which demands a great deal of organisation and administration. Green resources are only one of many issues in the practical application of day-to-day routines, where organisational clarity is lacking. The amount of work needed for dealing with administrative and political issues entangles management in other political fields (Meland, 2006).

Norwegians have strong bonds with nature, rooted in history and based on a national identity and culture embedded in rural life and nature, and a prosperous society, with a belief that most people are well off. Citizen engagement is regarded as personally rewarding and half of the population devotes time to volunteering (Tranvik and Selle, 2005). The actual management of green resources seems to be characterised by extensive collaborations between public and private actors, inter-municipal outdoor recreational councils, departments in municipalities and a rich field of volunteering organisations (Stokke et al., 2006). Individual engagement is vital and green resources are secured because of the engagement of people (Stokke and Falleth, 2010). Although volunteering is a long tradition in Norway, the literature indicates that this trend of

citizen involvement is strong in the contemporary governing of green spaces internationally, ranging from active citizenship based on self-organisation to government-led public participation. Varied approaches to governing the interactions among a plurality of actors and institutions are represented in the literature (Arnouts et al., 2012; Fors, 2018; Buijs et al., 2019).

Public green spaces are predominantly in the hands of local authorities (Carmona et al., 2008; Jansson and Randrup, 2020). As described, the overall application of the descriptions, measures and definitions of quality relies on those local employees dealing with green space, notably the green space manager. The prioritisation and operationalisation of overall political aims often depend upon these individuals, who are concerned with local issues, opinions and their work situation. They generally work in a complex municipal system, where the green sector is downgraded and budgets for upkeep are limited, relying on volunteers to manage green spaces and having to deal with politicians that may acknowledge the need for quality green spaces, but the actual resources made available for them seems to be lacking. The situation is exacerbated by a lack of holistic management arrangements that ensure quality green space and the innate views of quality within these governance arrangements in green space management.

1.1 AIMS AND RESEARCH QUESTIONS

The overarching aim of the work presented in this thesis is to investigate quality in public green space management arrangements in Norway, elaborating on the specifications of quality within Norwegian public urban green space management, and to provide a theoretical understanding of the concept of quality in green space management arrangements. This contributes to the application of quality in local practices. To meet the overall aim, this work was divided into three research questions.

The first research question investigates Norwegian green space management in terms of its enabling environment – the organisation of management in municipalities based on the concept of place-keeping (Dempsey et al., 2014). Deepening our understanding of the characteristics that contribute to preserving quality green space in municipalities contributes to advancing management practices and builds a base of evidence that can provide input for management practice.

(1) What are the characteristics of Norwegian place-keeping and how do Norwegian municipalities differ in their place-keeping activities?

The second question focuses on user perspectives. It evaluates the positive relation of quality perceptions to increased visits of green space. Deepening the understanding of overall quality perceptions on the visitation of green space sheds light on the desirability of quality green space.

(2) What is the relation of quality perceptions to green space visits?

The third question investigates quality within the active citizen movement of green space governance. It investigates how green space managers, operational employees, unorganised users and organised user groups collaborate within a green space management arrangement and how the different quality perceptions are played out in managing green space. Specific insights into a well-coordinated management arrangement can reveal strategies for safeguarding quality green space.

(3) How is quality green space discussed in one public urban green space management arrangement?

1.2 STRUCTURE OF THE THESIS

The first chapter introduced the complexity of managing green spaces, leading to three research questions. The second chapter focuses on the theoretical framework. First, the literature review on green space management in Norway and quality is combined with a review of political modernisation processes to gain insights into the use of quality. Secondly, an overview is provided on how the theoretical framework is operationalised, presenting the main concepts and providing clarifications on how they are used in this thesis. The third chapter is devoted to the research design and reflections on the philosophy of science. The fourth chapter presents the methods, the quantitative and qualitative strands, and the data that were collected. Short summaries of each of the three papers are presented in the fifth chapter. The sixth chapter presents synthesised discussions of the findings. Some closing remarks and a conclusion are provided in the seventh chapter.

2 THEORETICAL CONSIDERATIONS

The thesis focuses on quality within public urban green space management, where the management of green spaces encompasses strategic, tactical and operational processes, but also the political, cultural and social spheres, which are embedded in and surround management processes. As illuminated in the prologue and introduction, public green space management is complex and different actors are involved at different levels and times, and those have varying effects on the quality. The actors effect quality, management and governance of green space. Those who deal with green spaces have their agencies and legitimacy within the organisation. The organisational structures, rules and resources that define management within a given institutional frame can be both limiting and enabling factors for green space managers.

This calls for an approach that investigates public institutions, the actors in those institutions and other actors involved in the governance and management of public green spaces, the resources these actors have at their disposal, the rules that guide the arrangement of public green space management and the discourses that are used within the arrangement. The Policy Arrangement Approach (Leroy and Arts, 2006) offers a suitable frame for the research of green space management in Norway for two main reasons:

1. The acknowledgement of the relation of discourses to actors and their agency; this refers to the stories and meanings about the space, where quality is inherent in each of the stories about green space as told by the individuals.
2. The acknowledgement of the freedom of the actors involved in management arrangements; actors act based on their motivations within the context of overall societal structures.

2.1 THE POLICY ARRANGEMENT APPROACH

To capture policy substance and organisational aspects of the changes observed in policy domains, Leroy and Arts (2006) developed the Policy Arrangement Approach. The approach sheds light on the actors involved in a given policy arrangement, the discourses utilised within the arrangement, the resources available to them, and the rules of the game.

The organisation of an arrangement and its resources and rules, but also the actors, or more precisely their agency and discourses, are shaped and structured through overall political and social structural changes. These arrangements are also shaped through the day-to-day practices of actors. These interplays create specific arrangements (Arts et al., 2006). One specific arrangement, a policy arrangement, is the prevailing arrangement of actors, resources, rules and discourses that exists at a given point in time; it is defined as “the temporary stabilisation of the content and organisation of a policy domain” (Arts and Leroy, 2006, p.96). A policy domain is part of a political system sharing a characteristic such as health or environment. These arrangements are not just manifested in political domains; governance arrangements are also manifested at a given point in time. The Policy Arrangement Approach has previously been applied to analyse governance arrangements in relation to green space management e.g. Buizer et al. (2015); Qiao et al. (2018) and Quinton et al. (2020).

The four dimensions of actors, discourses, resources, and rules are presented in Table 1. As the table shows, the dimensions can be grouped according to the agency and structure of the arrangement. Agency incorporates actors and their discourses; structure relates to substance and organisation. The organisational aspect of the arrangement consists of resources and rules, while the substance is reflected in the discourse.

Table 1: The Policy Arrangement Approach according to agency and structure (based on Arts et al. (2006))

Agency		Structure	
Actors		Substance	Organisation
Actors	Discourse	Resources	Rules
<ul style="list-style-type: none"> • Green space managers • Operational employees • Unorganised users • Representatives of organised user groups 	<ul style="list-style-type: none"> • Understood as to the stories told; giving meaning for the individuals, comprising problem definitions, normative expressions and strategic considerations 	<ul style="list-style-type: none"> • In terms of actual resources (finances, partnerships, knowledge, tools for evaluation and quality) 	<ul style="list-style-type: none"> • Political level policies and agendas • Informal and formal procedures embedded in the management process

The duality of structure is visible here (Arts and Leroy, 2006), are agencies influencing structures or are structures influencing agencies. However, this debate is not part of this

thesis. From the perspective of Giddens's structuration theory (Giddens, 1984), agency is the ability of individuals or a group to affect their environment. Structure is the material, the context and the conditions that define the actions of actors. These structures guide or constrain agency and behaviour, while at the same time agencies also form these structures.

In this thesis structures and agency are regarded as distinct, however, both inform each other. The understanding of agency is then initiated within the structures given, the organisation, rules and resources (McAnulla, 2002). The prevailing green space management arrangement, the organisation of management, builds the structures for management processes. Those who deal with green spaces have their agencies and legitimacy within the organisation. And yet, actors within these structures can act reflexively. They can formulate strategies, ideas or meanings based on their knowledge. Actors thus may form strategies to overcome problems arising in their day-to-day work and they might change given structural conditions through strategic learning (McAnulla, 2002). Actors include those involved in managing green space, the green space managers in institutional organisations, operational employees, representatives of organised user groups and unorganised users of space. The discourse dimension focuses on the discussions and stories about quality green space, based on the contested nature of quality, where quality is inherent in each of the stories told by the individuals about the space. Structures describe the institution of green space management, the organisation, the rules and resources. Resources entail skills and material and financial resources that were brought into the process by the actors. Rules refer to the informal and formal procedures that are embedded in the process of governance, but also the regulations and formal agendas at a political level. The dimensions are interrelated, and changes in one of the dimensions induce changes in the others. New actors may change existing coalitions. The mobilisation of resources (for instance knowledge or money) may lead to shifts of relations. Changing regulations locally may change management routines and lead to more innovative processes. New concepts of policy, problem definitions or solutions may change storylines which in turn change the arrangement.

2.2 THE DIVERSIFICATION OF QUALITY AND THE MANAGEMENT OF QUALITY GREEN SPACE

Structures and agencies in green space management arrangements are not just developing; they are responses to changes in overall structural processes. Acknowledging the relation of overall structural processes to the use and understanding of quality within public green space management, this section presents quality from the early concept descriptions to how quality is perceived in a green space management arrangement.

2.2.1 THE CONCEPT OF QUALITY AND WHY WE NEED TO LOOK AT IT

Cicero (106–43 BC) coined the word *qualitas*, derived from the Latin word *qualis*, meaning *what kind of*. Quality has two main dictionary (dictionary.cambridge.org) meanings:

1. The way a thing is: the nature of something or someone/a specific character
2. A degree of excellence: a high standard

The first definition describes the properties or characteristics of an object. In this definition, quality relates to physical properties. The dictionary supplies further general descriptions of quality in different fields, such as management, marketing, or organisation. The Norwegian dictionary (snl.no/kvalitet) gives the example of the Norwegian standard, as a measure of characteristics fulfilling certain needs or expectations that have been specified. The second definition refers to intangible qualities and implies an inherent subjectivity. Quality is relative, but different quality understandings cannot merely coexist. Owing to three shifts in society, quality has become ubiquitous, organised and public. Quality has become ubiquitous as the fields of policy, regulation, management practice, organisation and many more apply quality. It is embedded in regulations and organisations, which qualify and organise quality for society, thus quality became organised. The quality of air or water is something on which society depends and ensuring this kind of quality is in the hands of the public sector, so quality became public. One's understanding of quality is tintured by the positive connotation of the term. It seems difficult to have something against quality. However, can quality be something good and at the same time anything? If quality can mean anything, even the opposite, can quality then be unconditionally positive?

Organisations provide a service of quality green space according to their measures of what quality green space is. Hence, quality is a tool for interpreting and meeting the world. Based on the two different perspectives of quality in the dictionary, quality may be regarded as a system-based tool (measuring a specific characteristic) and subjective experiences. In everyday language, people talk about a given quality concept and may not consider the existence of other concepts, as if the concept used covers all kinds of quality. As such, the public regards quality as something that is there or is lacking, not something that has been created or chosen. The nature of quality is something that is constructed, and it is constantly changing. It follows that a substantive definition of quality is not feasible (Dahler-Larsen, 2008). Rather, the changes of the concept of quality over time allow for insights into how quality was used and transformed in general and within green space management in Norway.

A literature review was performed, with the aim to gain an overview of the field of green space management in Norway. The review was not straight forward, traditional search databases did not reveal satisfying results and archive reviews as well as snowballing have been applied to establish an overview of the field. In total 44 documents, reports, articles, guidance booklets, master and doctoral theses have been analysed. The review is presented in chapter 2.2.4 to 2.2.6. The literature is integrated in overall structural processes, and trends in societal and political spheres that have influenced current management arrangements. The review is set into context making use of institutionalisation and political modernisation. The reviewed reports, articles and theses are presented in Appendix I.

Institutionalisation describes a phenomenon in which peoples' actions gradually develop into more or less stable structures (Lieberink, 2006). Task and interactions of and between actors have been divided into their specifics, so that certain habits and regulations have formed to formal structures and patterns of organisation. Changes and adjustments of these patterns and structures occur continually within the organisation (Arts and Leroy, 2006), the structures in turn shape subsequent behaviour (Lieberink, 2006). These changes not only emerge from the actors and their interactions, but also from structural processes of social and political change, that means from political modernisation. Political modernisation describes the changes in a domain of society connected to developments in social, cultural and economic spheres, capturing broader

structural transformations in a political domain (Arts et al., 2006). Developments in practices influence these transformations, just as modernisation processes influence practice, emphasising a duality between structural transformations and practices (Arts and Van Tatenhove, 2006). Actors apply their agency to create discourses for specific purposes; however, discourses are also part of structure. Ideas are received, developed, and created through others as well as through overall political and social spheres. Combined, the worldview of actors is created. To grasp public green space management arrangements, an understanding of the surrounding overall structures in which the current management arrangements were produced could give a better picture of the green space management arrangement today.

In this review, political modernisation is used as an analytical tool, describing the shifts in management and the effects that structural transformations have on day-to-day processes in green space management arrangements. The emphasis is on linking green space management processes to social theories on modernity and reflexive modernisation (Beck et al., 1994; Beck et al., 2003; Dahler-Larsen, 2008). In this way, structural transformations that institutions have experienced (Arts and Van Tatenhove, 2006), can highlight diverse consequences for green space management processes.

Political modernisation is thereby not a straightforward process, yet a certain path of development in space and time is visible (Arts and Van Tatenhove, 2006). Traditional and modern management methods might exist concurrently; conversely, they might merge into new ones or repeat themselves. Arts and Van Tatenhove (2006) distinguish the first and second phase of modernisation and yet, the end of one phase does not imply the beginning of the other. As described, it is more likely that the phases will overlap or develop simultaneously, and that hybrid forms will exist. The first phase of modernisation relates to the post- Second World War era. This phase is characterised by optimistic views on government steering of nature and society. The state is empowered to provide public goods, using comprehensive planning and rational policy making. The second phase relates to post-modernity or reflexive modernisation (Beck et al., 1994), distinguished by changing attitudes towards the state created through globalisation and individualisation. This phase brings about more cooperative movements to counter state control, to counter expertise. This presents different views

on steering, accompanied by the state, market and civil relations that form the structural frameworks for green space management (Arts and Leroy, 2006; Arts et al., 2006).

2.2.2 THE EARLY CONCEPT OF QUALITY

In the 17th century, quality referred to the character of a person, in the sense of *a man of quality*. It described someone that was superior and excellent, separating the sublime from the common. Quality was thus more than just a description of properties. John Locke (1632–1704) described the qualities of objects as primary qualities, those inherent in things itself, those inseparable from the object even when the object changes its physical form. Secondary qualities are within the object itself and produce sensations within a person. Sensations are hence described as impressions that objects make on the mind. This transference of an object's qualities into the mind allows for distinct perceptions and creating ideas, depending upon how the object affects the person (or the senses that develop these impressions) (Locke, 2007). Primary qualities are measurable and secondary qualities are not. People create quality and are at the same time the judge of quality. Primary qualities are therefore measurable, while secondary qualities are related to the individual's perception of them. Although (Mackie, 1976) discusses arguments for this distinction, Berkeley for example, critiques this distinction (Dicker, 2011).

2.2.3 QUALITY IN MODERN SOCIETY

The Industrial Revolution enabled factories to produce objects that had inherent quality. Quality became part of production systems. This means that human beings produce quality and are at the same time the judge of quality. Quality is not just something objects have or something which can be experienced more or less subjectively; quality is now fabricated. Mass production introduced and established the perfection of processes through quality assurance systems. Quality subsequently becomes something produced every time, something that is ubiquitous. To ensure the consistent production of a quality product, management processes and structures are required (Dahler-Larsen, 2008). Increased focus on customers and competition has led to a new understanding of quality. In the 1960s and 1970s, quality was understood as fitness-for-use, focusing on the individual's use of products. This included a reorientation of the market; if users prefer products with a lower standard, inferior products can be

produced if the consumer asks for it. The production of quality products was moving to the background and the control of processes has shifted towards the organisation and management of these processes. The focus is on the entire production organisation system, which connects to markets and strategies. Quality is ensured by managing the entire organisational process. Quality is an abstract of the initial quality and can be anything (Sower and Fair, 2005). However, customers and their culture have become autotelic, and their needs and demands do not follow any logic. Hence, the need to control quality has become stronger, lifting quality into the metasystems of the organisation, into the organisation of organisations. A quality organisation produces quality organisations that produce quality. It is not about what quality is, but it is rather about the steering of quality. Quality has become a characteristic of an organisation that produces quality. Rules, regulations, procedures are now followed by the organisation to produce quality and the compliance to rules has become an aim in itself (Bauman, 2001).

2.2.4 A LITERATURE REVIEW ON QUALITY IN THE ORGANISATION OF PUBLIC GREEN SPACE MANAGEMENT IN NORWAY INTEGRATED IN OVERALL STRUCTURAL PROCESSES

The era of industrialisation was accompanied by urbanisation and a population increase in the capital region of Oslo, and parks were introduced early on. They were primary individual parks financed by private individuals and organisations (Jørgensen and Thorén Halvorsen, 2013). In the period from 1916 to 1948, the idea of a connected park system emerged and was introduced in plans, i.e. the general plan for Oslo in 1929 which was approved in 1934 (Hals, 1929). A system of parks began to develop and the general plan for Oslo was introduced in 1950. The plans for the inner city were in line with the general plan from 1934. However, from the 1970s, accompanied by a shortage of houses, pollution and a movement out of the city, the system of parks decayed (Jørgensen and Thorén Halvorsen, 2013). This situation is picked up in contemporary Norwegian literature. In his thesis, Løvdal (1989) considers the times of park decay and sparse resources for management and focuses on a management of green spaces, based on registries of the properties of space, privatisation of operations and user involvement to counter times of sparse resources.

From the 1980s onwards, highlighting the shift of quality into the organisation itself, institutions that manage green spaces come into play (Dahler-Larsen, 2008). The belief developed that the public sector itself should be an organisation of quality. A quality process ensures a quality product. Therefore, quality is achieved through measures for improved efficiency, effectiveness, accountability and service quality, conceptualised in the emergence of new public management (NPM) reforms (Chouinard and Milley, 2015). NPM reforms are characterised through the a change from centralised to more decentralised structures in a globalised economy based on knowledge (Lindholm et al., 2015a). Executive leaders become more prominent and at the same time, the focus is on achieving results and performance within steering mechanisms (Øgard, 2014). Thereby, more independent agencies and state-owned companies were gradually created and subordinate organisational units were moved further away from political executive leaders (Lægneid et al., 2013). The process of devolution may have increased vertical coordination; however, horizontal coordination has been widely ignored, which is an important matter in the prevailing system (Lægneid et al., 2013). Horizontal coordination describes the distortion of the boundaries between the subsystems at the national level. Vertical coordination refers the relocation of politics beyond the nation-state, alongside globalisation and individualisation (Arts and Van Tatenhove, 2006). Agencies were motivated to change their behaviour (Hansen et al., 2012), resulting in a relocation of power for making public policy decisions and more freedom of decision-making for public management and their agents (Chouinard and Milley, 2015). However, this also led to a fragmented management system in times where the green resource was not prioritised (Jansson and Randrup, 2020). Løvdaal (1989) points out, for example, that new concepts such as environmental protection takes away tasks from green sectors, which may fragment green space management in the future if no precaution is taken. This is also reflected in the work of The Nordisk Ministerråd (1987), given the low priorities for the green sector and diffused responsibilities for green resources combined with a lack of implementation of policy goals, politicians, planners and individuals need to join forces to secure the green resource.

The NPM reforms imported tools and methods from the business sector. Business oriented practices and ideas led to the introduction of performance control mechanisms in terms of ensuring the achievement of desired results. This means that local

governments were under greater supervision and control (Tranvik and Selle, 2005) through increased evaluations, reporting and a concentration on quality in models as well as techniques for improved service provision (Chouinard and Milley, 2015; Lindholst et al., 2015b; Leiren et al., 2016). These changes of organisation are picked up in Norwegian literature. Geelmynden (1984) reports on standards that have to be followed while maintaining an area. Elvestad et al. (1984) established a system for better planning for operations of the recreational resource and highlighted the importance of forming a comprehensive impression of the recreational resource through evaluations.

Demands for improving overall efficiency was also apparent in green space management, maintenance tasks were reoriented towards quality (Lindholst et al., 2015b). Quality is related to a conformance to certain specifications, a mechanism to control performance in terms of ensuring the achievement of desired results (Chouinard and Milley, 2015). This allows for a precise measurement of a product (Reeves and Bednar, 1994) or quality standards for maintaining physical structures or nature in green spaces. Quality was more regarded as a market good with easily measurable and controllable outputs, conceptualised in technical standards, so that the quality concept evolved to a technical concept (Øgard, 2014), a “compliance-to-specification” concept as Reeves and Bednar (1994) describe it. The standards that have been established relate to an objective (quantitative) quality, which includes customer demands that have been incorporated into the physical characteristics and standardisation of the product, to achieve the consistent production of quality (Reeves and Bednar, 1994). These standards have shaped the understanding of quality as an instrument for maintaining tasks (Lindholst et al., 2015b). The technical quality standards aimed for are defined in contracts and hence results are relatively easy to control. This is in line with the efficiency thought of the reforms, the contracting out of services is assumed to contribute to improved economic performance. In addition, from a capability perspective, the specifications make certain tasks reliant to the relevant organisation and dependent on expertise (Leiren et al., 2016). A high degree of autonomy within decision-making based on expertise and knowledge exists in Norway (Hammerschmid Gerhard et al., 2013) and this places experts such as green space managers in a powerful position. Such quality specifications establish a normative set of decisions that define

quality and hence a good green space. The discussion of what constitutes a good quality space has shifted to a discourse of experts and professional knowledge (Lindholst et al., 2015b). This has also moved green space managers, operational employees and organised user groups into a position of evaluating (Dahler-Larsen, 2008). This view of quality has created difficulties related to measuring and operationalising the varied values of the users who judge the product deriving from green space management.

From the 1990s onward, the NPM reforms started to influence organisations. The quality of an organisation, the internal organisational routines and resources ensured the desired performance (Leiren et al., 2016). Evaluation techniques, based on the perspectives of experts, as a base for planning practices and operations on a municipal level has continued in literature. Based on the government White Paper number 40 (1986–87), requiring the facilitation of outdoor recreation for everyone, Bråtå (1990) reviewed the literature to establish a knowledge base of recreational areas for classification and valuation in planning. Gundersen et al. (1994) reveal that green structures have an unclear status, aims and modes of protection. Even though the protection of the content and qualities of green structures is legally required, little consideration is given to the requirements for such qualities in local plans, reinforced by the lack of evaluations of the multiple functions of green structures.

2.2.4.1 NEW PUBLIC GOVERNANCE: CHANGING VIEWS ON GREEN SPACE MANAGEMENT AND QUALITY

The influences of globalisation and individualisation and the risk that emerged changed the governing and steering mechanisms into new arrangements, interweaving market, state and civil society (Arts and Van Tatenhove, 2006). Complex problems can be solved through collaborative learning, innovation, networks and a focus on bottom-up approaches, where the values and opinions of society are considered in public policy processes and implementations (Øgard, 2014). These changes were a response to the multiplex and fragmented nature of policy implementation and service delivery (Øgard, 2014), a response to the problems of steering and governance associated with the first phase of modernisation (Smith et al., 2014a). This may signal a shift away from a primary focus on results and efficiency towards the achievement of the broader governmental goal of public value creation (O'Flynn, 2007). New Public Governance

points towards a wider perspective on steering, engage public actors, private actors and organisations of the civil society (Aspøy, 2018).

The relation of the individuals dealing with green space to the value of quality green space is picked up in Norwegian literature. Rudi (1995) considered the values and visual entirety of green structures and their use interests, for instance agricultural and forestry, and how those are protected within regulations, finding that regulations allow for protection if actors are aware of them. Thorén (1996) focuses on changes in the green structure in several cases, finding that green structures are entirely dependent upon actors' engagement and efforts. Moreover, Nyhuus (1996) found that overall changes in the green structure are the results of planning efforts. Expanding their knowledge on green structure changes, Nyhuus and Thorén (1996) report on shrinking natural areas and urban forests that are poorly safeguarded, while cultivated, half-open and grey areas are increasing in cities. Thorén and Opedal (1997) researched developments in municipalities that had a green plan (107 out of a total of 435 municipalities), indicating that the environmental, planning and technical departments mostly initiate and participate in preparing green plans. Green planning is seen as a multisectoral process that is not steered by politicians, even though they participate in the process. Gundersen (2004) found that most urban forests are characterised by the absence of plans, poorly developed infrastructures, and vast unkept areas with limited access possibilities. A focus on access and quantity overshadows actual quality; forest management should be unique and rooted in local knowledge, with the green space manager focusing on finding the best technical and most economical solutions adapted to local conditions. Persson and Randrup (2006) compared park management in the Nordics, concluding that new modes of green space management processes within a changing environment, where green space managers adapt and find new working methods, are necessary.

2.2.5 NEW ARRANGEMENTS IN GREEN SPACE MANAGEMENT

Increased involvement of inhabitants demands new approaches to management processes. The relations between green space managers, operational employees, organised user groups and unorganised users involved, change power relations. New processes require flexibility, wider communication, openness to alternative modes of

interacting and meeting views different from the professional perspectives (Jansson and Lindgren, 2012). The emergence of a new public value and a renewed focus on urban space as a means to create vital and viable cities has enhanced the need for quality public spaces (Carmona et al., 2008). This reorientation to including various actors in green space management processes is reflected in the literature at that time. Stokke et al. (2006) note that the management of outdoor recreational life is a neglected field in Norwegian research. The management and planning practices in municipalities vary, and the actual management seems to be characterised through extensive collaborations between public and private actors, inter-municipal outdoor recreational councils, departments in municipalities and a rich field of volunteering organisations. Tordsson (2008) questions the political-institutional grounds of outdoor recreational life, stating that the field only receives pocket money from the state and has long relied on public efforts to secure such areas in planning. Outdoor recreational life has been reduced to a technical concern, neglecting the values of nature for the individual and society. Stokke et al. (2009) ask who defends outdoor recreational life at a time when management is based on agreements and partnerships rather than on strict steering. They find that national ideals, goals and strategies significantly diverge from local practices, because of, amongst others, complex management with unclear responsibilities, dependent upon economic resources and actors that follow up planning intentions. Stokke and Falleth (2010) found that planning in itself is not sufficient for protecting urban recreational areas. Valuable as well is the meaning of spaces for people which motivates them to protect spaces. Poorly used resources for the protection of green spaces bring forth disappearing tree layers, aesthetical and urban landscape values, and biodiversity is declining (Thorén, 2010). Durucz (2014) describes the status of green space management in the light of organisation and economics. Municipal budgeting is diverse, different organisational structures exists and a lack of green competences within the organisation are described by green space managers. The importance of personal engagement, on both sides private and public, and the promoting of ideas among politicians is highlighted as positive management practices. Several international and EU agendas emphasise this need. The New Urban Agenda, endorsed by the United Nations General Assembly in December 2016, calls for a “promotion of safe, inclusive, accessible, green and quality public spaces ... gardens and parks ... that are designed and managed to ensure human development and build peaceful, inclusive and participatory

societies” (United Nations General Assembly, 2016). The new agenda on physical health launched in 2018 stipulates that green spaces are an integral part of delivering public health and quality of life (WHO, 2018). Such policy guidance supports the emphasis put on urban green spaces and their role in the provision of quality of life and wellbeing for the population.

Urban green spaces hold the potential to benefit humans, and these benefits are necessary to achieve these wider political urban policy programmes (Lindholst et al., 2015b). Services are provided through deliberate and inclusive searches for value, social and economic, by a variety of stakeholders (Lindholst et al., 2015b). Problems are solved locally through partnerships of stakeholders and modes of governance (Øgard, 2014). Green space managers have to reorient themselves and provide services and define those depending upon a public value (Walker, 2004; Lindholst et al., 2016), and respond to the demand of users’ understanding of quality (Lindholst et al., 2015b).

2.2.6 THE SOCIAL NATURE OF QUALITY

Complexity and subjectivity remain part of the concept of green space quality. Assessing quality depends on which quality is the focus of the assessment, who is involved in the assessment and for whom it is intended. Experts can therefore assess quality objectively, or quality can be assessed based on users’ perceptions (Fors et al., 2015). Quality is both descriptive and evaluative, within an object, and something that is experienced. The practices it relates to are multidimensional and complex, and socially speaking, they are relatively open to how the term is translated into something concrete in specific situations. This translation also depends on the person translating. Feigenbaum (1951) writes: “Quality does not have the popular meaning of the best in any absolute sense” (Feigenbaum, 1951, cited in Reeves and Bednar, 1994 p. 421). As presented, a quality organisation produces quality organisations that produce quality. These organisations are differentiated, functional and operational closed systems in themselves. Performance is measured in its own code, defined by the same organisation measuring performance and thus quality lies within the system. Quality must be abstract and relative so that it can be used in different systems. Quality is a general medium to observe phenomena, and it can have all kinds of characteristics (Lindeberg, 2007). According to this view, organisations can judge quality by applying an abstracted

quality, such as the smiley schemes used in public service delivery, for instance in airport security checks or bathroom evaluations. Such systems are separate and do not really say something about quality itself, but they provide a technological method to process information, which gives a result that then describes quality. The advantages of these abstracted systems are comparability and intelligibility, measuring something, or expressing aims on a scale while reporting the subjective opinions of users. It is important to understand what users regard as high quality, but despite the applicability of abstracted quality, it remains difficult to assess what quality entails. Furthermore, such abstracted quality definitions are created by the very organisation that operationalise quality. These systems sustain themselves, so how do we know that the characteristic that is measured is something of quality? Institutions create these quality judgements and systems, and we generally trust these institutions. This raises questions about the operationality of quality. How confidently can a system state that something has quality when it has been created by those who are in the system?

From a reflexive modernity perspective, discussions on quality shape quality definitions, and these processes create a quality understanding. Quality is not a reference to the characteristics of something, but rather a manner of thematising how things are handled. Quality definitions are derived from social processes; they are relative to them and have a temporal character. Quality can be a space for reflection, a space where we can engage to discuss how to achieve quality. Quality is the background process, the medium and not the object itself, which is the content (Dahler-Larsen, 2008).

In conclusion, from the early concept of quality (quality as excellence), quality developed into organisation as quality in evaluations and tools (quality through 'conformance to specification') and quality as values (values that exist within users that judge the product and green space managers that use varied values to measure the quality of the product); lastly, it developed into an abstracted quality (quality as 'meeting/ exceeding expectations'). Within the scope of this thesis, quality is examined as 'conformance to specification' and quality as 'meeting/ exceeding expectations'.

2.3 ACTORS AND ORGANISATION

2.3.1 OPERATIONALISATION OF GREEN SPACE MANAGEMENT: PLACE-KEEPING

The organisation of public green space management at a given point in time creates different arrangements of management in Norwegian municipalities. Within these arrangements, based on several dimensions, processes ensure quality green space. The arrangement and the quality of the green space they produce is characterised and judged by the green space manager. The manager is situated within the overall structures or organisational frameworks of the institution that enable or constrain agency and behaviour, while at the same time actors and their agency might form these structures. Strategies, ideas or meanings based on the green space managers' knowledge, form ways to overcome daily work problems and they might change along with structural conditions through strategic learning (McAnulla, 2002). For example, a green space manager cannot establish a network of ski runs by the time the first snow settles; they therefore arrange with local initiatives to do so, even though those runs are on public grounds. Such arrangements might develop into more solid cooperation, enabling the green space manager to rely on those initiatives to take care of the runs every year at the due time.

To access the organisation of arrangements existing in Norway, the concept of place-keeping was applied. Place-keeping provides a holistic approach to characterising the actual factors, the resources, that influence Norwegian municipal management on a national scale. Dempsey and Burton (2012) developed the concept of place-keeping with a user-based focus, emphasising the importance of ongoing green space development, providing a framework for long-term green space management. The concept was coined by Wild et al. (2008) and elaborated in the EU MP4 project, Making Places Profitable – Public and Private Open Spaces, extending practical and research knowledge on the long-term management of green spaces. The concept seeks practices that contribute to sustainable long-term transformation (Dempsey and Smith, 2014). Place-keeping is a way of organising management, and a well-coordinated place-keeping process prepares for potential place transformation. Transformation requires an environment that enables municipalities to work towards that goal. An enabling environment provides the resources for managers to manage green spaces from a long-term perspective. Dimensions that provide an enabling environment for place-keeping include policies, funding, evaluations, governance, partnerships and design and management.

Through the lens of place-keeping, the environment that green space managers have at their disposal is identified. However, the relations between the organisational actors in place-keeping are difficult to comprehend within the scope of a holistic characterisation of Norwegian green space management. The place-keeping concept used in this thesis therefore does not represent all aspects of place-keeping.

First, the definitional ambiguity of the term green space management proved to be a challenge to be addressed. Several attempts have been made to describe and summarise management for green spaces (for instance Jansson and Lindgren (2012), Randrup and Persson (2009), Salbitano et al. (2016)). The traditional logic of organising management of open space separates planning and design from the actual management process. Planning and design are seen as processes dealing with new structures and landscape, carried out before management, which deals with existing structures (Jansson and Lindgren, 2012). The guidelines on urban and peri-urban forestry, from the United Nations Forest and Agricultural Organisation, describe management as including maintenance processes, related administration processes, the creation of management plans and the involvement of the public (Salbitano et al., 2016). Jansson and Lindgren (2012) developed a definition for urban landscape management through a literature review, defining management as “the activities performed by management organisations to maintain and develop existing urban green space for users”. This definition includes strategic work, planning and human relations. Management is a dynamic process of integrating economic, ecological, political and social aspects in a long-term perspective (Dempsey and Smith, 2014). And yet management is often used interchangeably with maintenance as La Rosa et al. (2018) and Douglas et al. (2017) demonstrate.

The focus of the survey is on existing green spaces and their quality and, as described, the process of design and planning is often separated from the actual management. Therefore, the design and management dimension is limited to maintenance as one part of the management process.

It is disputable if the best way of green space management can be defined, but it is indisputable that if dynamic systems such as green spaces are just maintained, they will gradually degenerate (Randrup and Persson, 2009; Burton et al., 2014). Therefore, a

strategic green space management perspective is supposed. Management should take place at several interconnected levels: political, tactical and operational (Randrup and Persson, 2009).

Table 2: Strategic management levels and related actions (based on Randrup and Persson (2009))

Level	Policy (tactical policy performances)	Tactical performances	Operational performances
Action	Specific strategies or long-term visions for green spaces, public as well as private and semi-private should be formulated (based on thorough analysis and plans produced at the tactic level)	Plans for public green spaces may be produced based on evidence from operations (such as green space inventories, street tree inventories, etc.) aimed at management routines carried out within the public green space organisation, and strictly at public green spaces	Tasks concerning operations of public green spaces, e.g., an organisation of the actual maintenance and maintenance itself
		Great need for a relationship between the public green spaces, other urban spaces and other public administrative authorities, such as those dealing with health, recreation and culture	Describing long-term visions for their green spaces

A literature review was designed with the aim of seeking an overview of relevant empirical work, relating to those three levels of interconnection. The levels and content are presented in Table 3. The review was carried out in Scopus, following a Boolean strategy. This strategy revealed a vast number of articles (3,255), with a lesser focus on specific management issues. Limiting the search to the key terms ‘green space management’, ‘public space management’ or ‘open space management’ as a united term in the title, keywords and abstract identified more articles specific for green space management. The search was limited to a range of years from 2000 to 2018 and revealed 105 articles. After an initial screening, 62 articles remained. Due to the specific topic of the search some articles deemed important by articles analysed have been included and some proved not to be relevant and have been excluded. 14 articles build the base that informed the changes to the place-keeping concept and aided the formulation of the survey questions as well as the analysis of the data.

The following section summarises the literature review. The reviewed literature focuses on the operational level. However, a movement towards more tactical approaches is

evident. Following the shift to new public values, a reorientation of the green space managers' position to a facilitator for involvement becomes clear. Green space managers should orient themselves outward and upward, and evolve from a provider of functional properties to a provider of services related to broader political urban policies (Lindholst et al., 2016). More literature with a focus on specific partnership arrangements in recent years emphasises this perspective (Mattijssen et al., 2017). Work related to policy and strategic level seemed flustered and oriented towards the traditional public sector model, where policy work is described in connection to relying on funding from taxation (Carmona et al., 2008; Dempsey and Burton, 2012). Management and political work, in a practical sense, remains unclear. Randrup and Persson (2009) argue for policy work as creating specific strategies and long-term visions for green spaces based on tactical and operational work. Lindholst et al. (2016) continue that political work relates to creating policies, engage in partnerships, cross-sectoral collaborations and community involvement. Involvement can engage citizens that influence mobilising political interests (Mathers et al., 2015) or activate activities that are aimed to teach policymakers to support and stabilise place-keeping (Mattijssen et al., 2017).

Second, new arrangements in green space management, change the governance of green spaces and their quality. Governance is "the spheres of relations between government and other actors in civil society or non-governmental sectors" (Smith et al., 2014a). Because these relations are complex, we examine place-keeping in existing partnerships within municipalities.

Figure 1 visualises the place-keeping concept applied in this thesis. Green space managers' perceptions of policies and strategies, funding, evaluations, partnerships and management and maintenance create than a holistic assessment of the characteristics of Norwegian green space management. A well-coordinated place-keeping process may then result in keeping a valued, high-quality and sustainable green space.

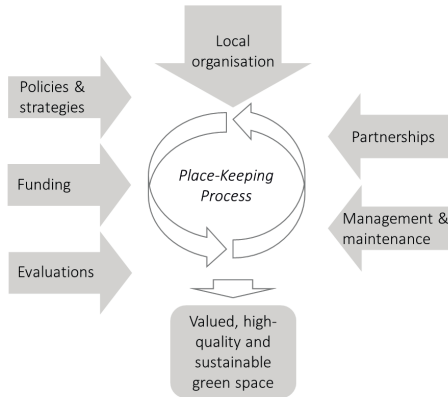


Figure 1: Analytical framework: Adapted place-keeping concept (Source: Dempsey and Smith, 2014 (adapted)).

2.3.2 PERSPECTIVES ON (SPATIAL) QUALITY

Public, urban and green in the description of green spaces implies spatial quality aspects, such as absolute space with boundaries that define the space. Green is characterised by surfaces that are unsealed and permeable, indicating the contrast with the grey spaces of cities, where the soil is sealed and impermeable (Dunnnett et al., 2002; Haase et al., 2020). Public refers to ownership as a common space in the hands of public institutions. Spaces are not absolute, they are relative and relational; a swirl of materials and agency intersects within space (Lefebvre and Nicholson-Smith, 1991; Malpas, 2012).

As described, quality has been used to evaluate the relationship between properties and the material world, and how visitors perceive them. More specifically, overall quality measures define and describe the quality of green space using a combination of properties. Quality is therefore described and measured through properties that are chosen by those who are investigating quality. The properties are chosen according to the knowledge of those who are creating and applying measures. In the context of green space, Van Herzele and Wiedemann (2003) describe quality using attributes such as space, nature, culture and history, quietness and facilities. However, accessibility and attractiveness are seen as another important aspect. Giles-Corti et al. (2005) explored the perceived quality of the properties and activities of green spaces. They used a

composite index of park attractiveness (which can be described as the quality of green space), incorporating environmental quality, three amenity factors and two safety factors as indicators. Grahn and Berggren-Bähring (1995) split users into four groups: children, sports and activity participants, cultural participants and people that are elderly, have disabilities or are ill, and identified eight basic characteristics of green space: (1) wild, (2) lush and species-rich, (3) spacious and unbounded, (4) serene and peaceful, (5) open, common meeting place, (6) place of imaginativeness, (7) festive and (8) cultural. Dempsey (2008) utilises the three traditions of thought in urban design and planning theories to summarise quality properties in built environments. These properties entail connectedness and permeability, legibility, safety, attractiveness, accessibility, inclusiveness, good maintenance and character of space. Ries et al. (2009) have measured perceived park quality through the physical, social, organisational, and economic environments that are positively associated with park use. Figure 2 presents different aspects of the chosen quality measures, grouped according to the roots of quality utilised within this thesis. The chosen measures represent the field of quality measures. It is believed that any other index would have presented similar results.

These measures reflect general preferences of quality green spaces that emerge repeatedly, such as appropriate maintenance, accessibility, safety, facilities and nature. Measures focus on largely on green space quality associated to physical activity. Beside these general preferences, reflecting adequately visitors' relations to spaces, the perspectives of quality, their experiences, how spaces are conceived and how spaces are lived through sensations and imagination (Lefebvre and Nicholson-Smith, 1991) might not be as well reflected in the measures chosen by researchers.

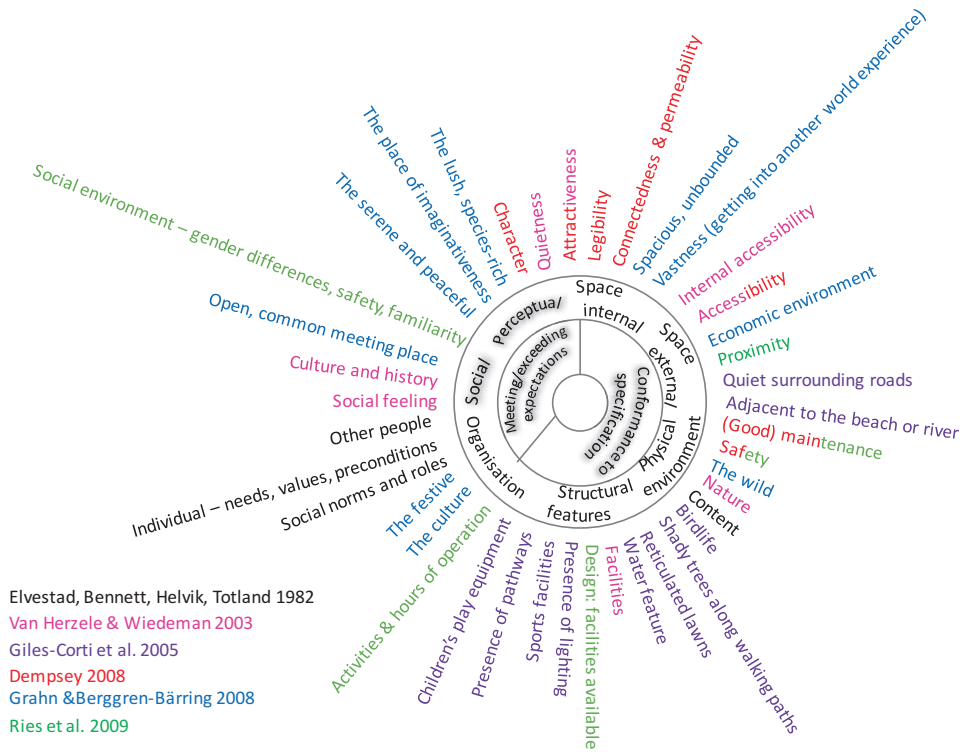


Figure 2: Overview over existing composite measures describing quality green space focusing on quality as 'meeting/ exceeding expectations' and 'conformance to specification'.

2.4 ACTORS AND SUBSTANCE: THEORETICAL THOUGHTS ON QUALITY IN (GREEN) SPACE

The concept of place-keeping and spatial quality are relating to material space that can be entered, maintained, managed and used. And yet, these concepts also have shown to present relative space and the relationality of space. No matter whether user, organised user group, green manager or operational employee involved in green space or management arrangements of green space, is bound to be influenced because of being situated in the space (relative space) and the conception of space through emotions and ideas brought into space (relational space) (Lefebvre and Nicholson-Smith, 1991).

“Raymond Williams spoke about looking out of a train window and there was this woman clearing the grate, and he speeds on and forever in his mind she’s stuck in that moment. But of course, that woman is in the middle of doing something, it’s a story.”

I find this a very compelling anecdote to relate to when talking about space. The train and passengers pass through landscape, carrying their own story with them, observing others with their stories. Space is then where these stories meet, it is the dimension of things being and multiplicity, presenting the existence of others being (Massey, 2013). Presenting a relational conception of space. Space is contained in objects and only when these objects relate to other objects they exist. Implying that an object or event in space cannot be understood only by that object or event, it relies upon everything else going on around it (Harvey, 2004). Relational space invites a swirl of spatial trajectories, networks and flows where space itself is disbursed and distributed as an effect of social processes so boundaries become blurred (Malpas, 2012).

The notion of socially produced space carries within the processes that define space, defining space in their own terms (Harvey, 2004). Critiquing the relational concept of space, as rather understanding social and political consequences than understanding space, Malpas (2012) argues for a more careful analysis of the ontological underpinnings of the concepts of space. Reflecting on the ontological basis of the concepts space, place and time, Malpas (2012) provides an understanding of them referring to Greek thought. Thereby, the concept of openness builds the idea of space. Space is created only through boundaries, for if there are no boundaries there will be no space. Space is inevitable entangled with time. Time is an essential movement that is carried within and between space. So, in space, something can appear or emerge, forming a movement towards, into or out of the openness, that is space. Emergence is thus the beginning of the idea of time. Intertwined with emergence is the idea of appearance, appearing or being in, is being essentially located and oriented, something appears in space. None of the concepts can stand alone, at least not completely, boundaries create an openness, that is space and, in this space, things emerge or appear. Place is then the space where openness, emergence and boundedness are held together. It is where the stories of the individuals meet Malpas (2012).

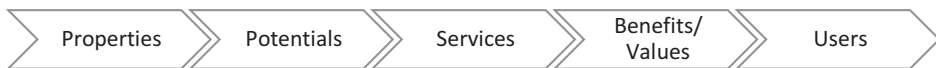
The focus on quality in a green space management arrangement within this thesis places attention on (green) place. Place essentially is created through the stories told, relating to time, the experiences and relations and the space. The stories then reveal the

individuals meaning of quality in place. The stories are embraced in the dimension of discourses in the Policy Arrangement Approach. The Policy Arrangement Approach bases discourse on Hajer (1995), describing discourse as “a specific ensemble of ideas, concepts, and categorisations that are produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities” (Hajer, 1995 p. 44). Discourses can be related to the behaviour of actors (Arts and Buizer, 2009). Actors are positioning themselves and others, actively or not, drawing on discursive categories (Hajer and Versteeg, 2005). Discourse itself is however not to be seen as a pure medium, it is part of reality and representing the view of the actor. Hajer (1995) also points out the bias that is mobilised within institutions and storylines: some kinds of conflicts or issues are favoured while others are suppressed. Environmental discourse has to be seen as not coherent; a variety of discourses and knowledge bases are involved (Hajer, 1995). Arguments might seem factual and scientific, but are also meaningful, suggestive and atmospheric (Hajer and Versteeg, 2005). Great variations exist in modes of speaking and debates with shared terms, and powerful stories can be told. A level of interpersonal interaction is involved based on witcraft or the skills of argumentations and storytelling. However, this does not mean that actors necessarily understand each other or the terms in the same way. The power of a story is its multi-interpretability. Actors can create their understanding, re-interpreting various elements of knowledge transgressing their competence. Complex research is so transformed into reduced visual presentations and slogans. Regulations depend upon such loss of meanings and multi-interpretability, as the highlighting of quality green space to promote quality of life and wellbeing in regulations and guidelines suggest. Memories and historical references are related to the “structures” of reality, culture, the rules and conventions that structure social order. And yet these “structures” are in a constant process of becoming. Similarities in stories relate back to memories and historical references drawn upon; the immanentist view (Hajer, 1995). In this thesis, discourse is understood as the stories told, giving meaning to social realities of the individuals involved in green space governance arrangements. These stories reveal perspectives of actors on quality in green space, inherently related to their context. Discourse comprising problem definitions, normative expressions and strategic considerations.

2.5 A NOTE ON ECOSYSTEM SERVICES

This thesis focuses on the quality of green space in green space management arrangements. Green spaces have the potential to offer various services from which people can benefit. However, the concept requires a perspective that quantifies nature's values. The management of green spaces relates to institutional interactions, with a focus on the actors and their perspectives. This work acknowledges ecosystem services and utilises them as a metaphor or language to communicate and clarify terms based on the ecosystem properties, potentials and services (EPPS) framework (Bastian et al., 2013).

The EPPS framework, developed for the assessment of ecosystem services, conceptualises the relationship between management, users and the green space. This framework is based on a previously developed three-pillar framework, including properties, potentials and services, and was extended to five pillars, emphasising the benefits that are derived by humans and the influences users and management have on the properties of spaces.



Properties are the basic structural features of green spaces. Properties, as components of nature, can be analysed by natural scientific methods, representing facts without a relationship to values or demands for services. These properties have the potential to supply services that support and regulate, provide habitat or relate to culture, or a combination. Services only become beneficial and valuable when they fulfil human needs. The framework emphasises these relations and interrelates them to the inherent subjectivity of perceiving green space.

3 RESEARCH STRATEGY, MATERIAL AND METHODS

3.1 REFLECTIONS ON THE PHILOSOPHY OF SCIENCE

This thesis is positioned in a perspective of actors in green space management arrangements in Norway, where the process of keeping quality green spaces provides green spaces that are able to provide services and are inviting for citizens in a long-term perspective. Forming a social-constructivist perspective, attention is concentrated on the actors within these arrangements. A socially constructed perspective on the keeping of quality green space considers actors realities, their meanings and stories. Realities are multiple, intangible mental constructions based on social context and experiences that are local in nature (Guba and Lincoln, 1994). And yet, the ability of actors to affect their environment, their agencies, are embedded in the structures of organisation, the context and the conditions that define the actions of actors (McAnulla, 2002).

The prevailing green space management arrangement, the organisation of management, builds the organisational structures for management processes. Within these structures, green space managers and operational employees can act reflexively, formulate strategies and act based on their knowledge. In the same sense representatives of organised user groups and unorganised users of urban green spaces act within their given context of organisational and societal structures. This means, elements of reality are often shared among many individuals (Guba and Lincoln, 1994). Considering, the formation of green space management arrangements around green space, a space with boundaries defining space, practices and activities concerning green space involve inevitably properties of space and practical applications. These properties and patterns of properties in space are found in definitions and measures of quality green space.

Also, local governments and civil society structures, central parts of Norwegian infrastructure, have been developed over a long time, creating overall patterns of organisation in state infrastructure. This ongoing social process, mediated through significant others, influences the formation of the character of a person. These processes, besides organismic developments, create a person's character relatively to the existing cultural environment (Berger et al., 1967). So, overall patterns of uses and users in relation to physical properties are identifiable and overall patterns in green

space management organisational structures can be identified. And yet, the rules and conventions that structure social order, are in a constant process of becoming (Hillier, 2015).

The postmodern condition presented by Lyotard (1984) relates to this perspective, stories are tales told in relation to the storytellers' interests, their perspectives or their reality, shaped through context. The stories, the meaning is located rather than discovered through conventional methods (Rosenau, 1992).

Inspired by Rosenau (1992), a more moderate, affirmative perspective of post-modernism is adopted in this thesis. Affirmative perspectives pursue practices (philosophical and ontological) that are non-dogmatic and non-ideological. The tacit ontological rules of a discipline depict inquiries about reality. However, the ontological underpinnings create and shape modes of inquiry and innovative explorations into new fields of inquiry are emphasised within a more affirmative perspective of post-modernism (Rosenau, 1992). The promotion of innovation in logic and methods prompted the mixed method design in this thesis accepting the complexity of researching practices and structures, considering both the shaping of the world by people and what the world actually consists of (Gubrium and Holstein, 1997). In this manner, the reality is come to terms with. Postmodern description aims "not to supply reality, but to invent allusions to the conceivable which cannot be presented" (Lyotard, 1984 p. 81). Considering the properties of spaces, some form of presence is essential to communicate what the absence of presence resembles (Gubrium and Holstein, 1997).

3.2 RESEARCH DESIGN

The sparse research contributing to a holistic assessment of Norwegian green space management (Appendix I presents the literature review on Norwegian green space management arrangements), combined with the complex system for ensuring quality green space and the tradition of involving citizens in operational work evoke the necessity to establish an overview over the actual resources available for green space managers and the actual process of actors involved in the management of green space, the arrangement of management. An emphasis was therefore placed on a holistic overview of the green space management arrangements in municipalities. The definitional ambiguity and the complexity of the term quality crystallised out as an issue

that needed to be addressed in order to characterise Norwegian green space management. Quality evolved to be the substance of green space management arrangements, the target to be reached in practices and processes and for users. The overall theoretical frame of the Policy Arrangement Approach and the distinction in agency and structures allows for the recognition of the organisational structures of management arrangements, the structures that surround the actors and agency, the ability of individuals or a group to affect their environment.

Although broad in scope, the research focuses on actors involved in the arrangement of green space management from three perspectives; green space managers' perspectives, users' perspectives and combined perspectives involving users, green space managers, operational employees and representatives of organised user groups. Involving these perspectives, the research process has not been straight forward and challenges emerging along the way needed to be addressed. The data was drawn from diverse sources and employed different approaches to fulfil the aim of the research based on a mixed methods design. The design is explanatory and sequential, combining a quantitative and a qualitative strand, involving three separate studies. In the quantitative strand, each study was preceded by a literature review, contributing and adding knowledge to the sequential process and the main aim (Creswell and Plano Clark, 2007; Bryman, 2015). Both strands illuminate actors' perspectives on quality in green space, within green space management arrangements, reflecting on the influences of the overall structures on quality perceptions. Figure 3 displays the methodological process of the research.

The prevailing green space management arrangement, the organisation of management, builds the structures for management processes, determining the actions of green space managers. In this way, an understanding from the perspectives of the structures initiates an understanding of the arrangement within municipalities. Consequently, as a first step, the quantitative strand was developed to establish the breadth of green space management organisational arrangements in Norway. The quantitative strand utilises survey research drawing inferences from existing differences between perspectives of green space managers on the organisational structures. A literature review considering the different dimensions of place-keeping in Norway informed the survey structure and questions.

In the same sense, the second survey established overall quality perceptions of green space users drawing inferences based on the precondition of optional activities. First, a literature review was performed to identify spatial quality indicators and activities. However, due to time restrictions and limited resources the survey was simplified based on the literature reviews and the concept of quality as 'meeting/ exceeding expectations'.

The organisational structures of place keeping characterise the overall arrangements of green space management in Norwegian municipalities. Interactions of management actions and user dynamics in place, the governance of place, cannot be described with the breath of the initial surveys aiming to characterise Norwegian green space management organisational structures and users' quality perceptions holistically for Norway. Understanding the interrelations within the arrangement of green space management citizen initiatives and (green) place and the complex set of quality perceptions was approached in a case study, the quantitative strand. The focus on quality in the green space initiative-based governance arrangement places attention on (green) place. The creation of place is essentially tied to the stories told by the individuals involved, the experiences and relations to the space. The stories then reveal the individuals meaning of quality in place. A case study approach allows for a more nuanced view of reality, understanding the arrangement of green space management in relation to practice (Flyvbjerg, 2006).

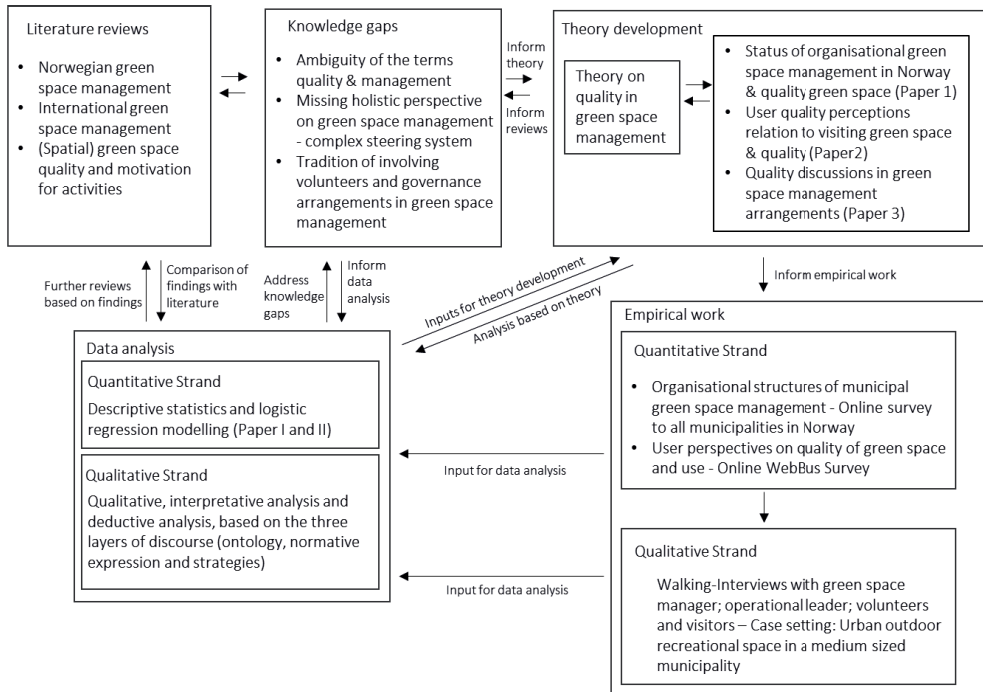


Figure 3: The methodological process of the thesis

The theoretical frame comprises actors and the frame of reference of them, organisational structures and substance. Each of the papers operates within this frame and is part of understanding Norwegian green space management arrangements in a holistic perspective. Figure 4 presents the dimensions of the Policy Arrangement Approach and how they are present in the papers and which concepts and methods are applied.

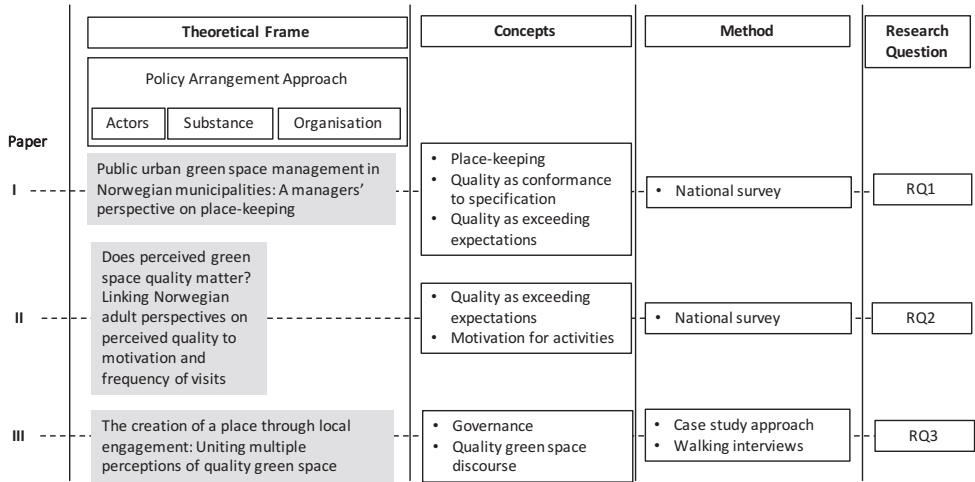


Figure 4: Theoretical frame, concepts and methods applied in each paper

3.3 QUANTITATIVE STRAND: ORGANISATION AND ACTORS

3.3.1 DEFINITION OF THE SURVEY TO MUNICIPAL GREEN SPACE MANAGERS (PAPER I)

The survey to municipal green space managers was designed to describe the organisational structures, of Norwegian public urban green space management from a key actors' position, the green space manager. In order to assess organisational structures, the concept of place-keeping was used. Each of the dimensions was constructed through key themes, presented in Table 3, illuminated through several questions. The themes were informed by two key studies in England (Neal Neal et al., 2014; 2016) and in Sweden (Randrup et al., 2017). In addition, the literature review on Norwegian green space management presented in chapter 2.2 and Appendix I and a review on green space management in international literature, present in chapter 2.3.1, informed the key themes of the survey.

Table 3: Analytical place-keeping dimensions and key survey themes based on Dempsey et al. (2014).

Analytical dimensions	Key themes in the survey
Local organisation	<ul style="list-style-type: none"> Green space management organisational distance from political decision-making Staff numbers working with tactical, operational and administrative tasks

	<ul style="list-style-type: none"> • Total amount of, and the development of green spaces over the last three (2014–2016), and next three years (2017–2020) • Changes of visitors in the coming years
Policies & strategies	<ul style="list-style-type: none"> • Written strategies for managing (developing) green space • Aims related to green spaces strategies
Funding	<ul style="list-style-type: none"> • Operational budgets, past changes and future predictions • New facilities and increased assets • External sources of funding • Estimates of costs created through neglected upkeep of space • Sufficient budget to keep quality green space
Evaluation	<ul style="list-style-type: none"> • Visitor monitoring and satisfaction • Mapping of green space
Partnerships	<ul style="list-style-type: none"> • Volunteers involved in upkeep of green space • Volunteers that engage in green space (re-)planning or (re-)design phase and how they are involved
Management & maintenance	<ul style="list-style-type: none"> • Maintenance regimes, e.g. in-house and/or outsourcing • Quality measurements/descriptions
Quality as the result of place-keeping	<ul style="list-style-type: none"> • Managers' overall quality perception of green space, past changes and future predictions • Threats to green space quality

3.3.1.1 DATA COLLECTION AND ANALYSIS

To formulate the survey questions, each of the dimensions of place-keeping has been investigated through literature researches in Norwegian and international literature. Resulting in 45 primary survey questions (more with follow-up questions). These questions were sent to a pilot group, consisting of seven green space managers from six municipalities, Oslo (over 600 000 inhabitants), three large municipalities (more than 20000 inhabitants), and two medium municipalities (5000 to 20000 inhabitants). A one day workshop was held in May 2017, where the pilot group and three researchers discussed the understandability of the questions, resulting in a total of 48 primary questions. The survey was administered online and sent to the pilot group for a final revision. The complete questionnaire of the survey can be found in the Appendix II.

Key informants were green space managers in each municipality in Norway (425 in 2017). The informants were invited to participate via personal Email to their work Email address on the 17th of October, 2017. Addresses were obtained through municipal website searches for units dealing with green space or units that shared responsibility units such as road and park units. If no unit was identified, key word searches on

municipal websites were applied and lastly technical units whose description mentioned green space were chosen. Technical units were identified as a relevant unit for green space management in previous research (Durucz, 2014, Persson and Randrup, 2006). Here we chose the head of the department as a contact person. In total four reminders have been sent out, the last reminder was sent out by the head of the department, with the hope to enforce the importance of the survey. Where there was no contact to be found, an email asking for a contact person was sent to the municipal general email address. In total 24 emails were sent, and we received three answers with details for a contact person.

A total of 153 municipalities responded to our invitation, of which 139 were valid responses. This corresponds to an answer frequency of 36%, 33% respectively. The geographic spread of the responding municipalities is presented in Figure 5. A relative representative spread of the answers is visible, however, a tendency for municipalities in the North to be somewhat underrepresented exists.

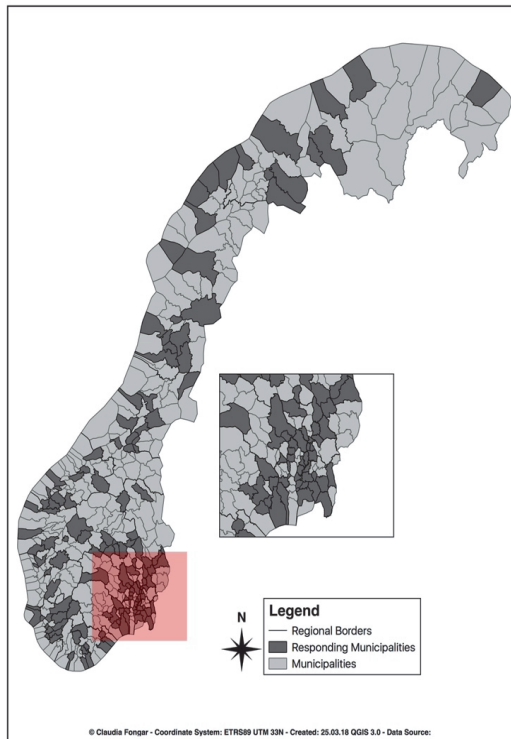


Figure 5: Geographical overview of responding municipalities, inset map zooms in to display the municipalities small in size close to the capital region

The responding municipalities represent the majority of the Norwegian population. According to the centrality index: most, second most and middle central municipality categories represent 69,7% of the whole population. This index is based on two base information: (1) travel time to the place of work and (2) service functions close to home.

- (1) The number of jobs reachable within 90 minutes from basic units ('grunnkrets'; the smallest geographical unit of measurement in municipalities).
- (2) Amount of different service functions that can be reached within 90 minutes by those living in these municipal boundaries.

The numbers are weighted so that jobs or service functions that are closer to the place of residence count more than those further away. The response rate was tested using all Norwegian municipalities and random sample distribution of the centrality levels.

Table 4: Centrality Index (CI) and responding municipalities

Municipal Centrality Level	Number of municipalities	Number of inhabitants	Share of inhabitants	Responses	Random Sample
Level 1: most central	7	1.028.323	19,6	7	3
Level 2: second-most	23	1.207.202	23,0	13	11
Level 3: middle central	64	1.425.313	27,1	35	32
Level 4: middle central	90	862.188	16,4	29	45
Level 5: second-least	113	491.726	9,4	30	56
Level 6: least central	125	243.565	4,6	26	61

The survey questions were explored using standard descriptive statistical measurements utilising the software program R (R Development Core Team, 2016). Details to each question are available in the data report (Fongar et al., 2019). To explore the relationship between the differences in municipalities and managers' perspectives on place-keeping dimensions, managers' responses to several questions have been used as explanatory variables in the logistic regressions analysis.

First, following the quality discussion, green space management units have been moved away from political decision-making within the organisation. A more complex management situation was created, where responsibilities are unclear. Therefore, placing of the unit was assumed to influence differences within place-keeping processes. Second, strategic management is put forward as a way of ensuring quality green space

(Randrup and Persson, 2009). The review on green space management in international literature revealed that most literature relates to operational work and to a tactical level of involving citizen. Both are addressed within the survey questions; however strategic related work was limited and therefore we utilised strategies as an explanatory variable. Third, tools to evaluate the quality of spaces are essential for effective management (Smith et al., 2014b). Therefore, the use of evaluation tools was used as an explanatory variable. The survey revealed that mapping was the tool used most and hence mapping was used as explanatory variable. Fourth, budgets have been put forward to influence place-keeping practices (Kreutz et al., 2014; Neal et al., 2014; Neal and Community First Partnership, 2016), therefore municipal budgets per capita (covering the gross operational expenditure for recreation according to Statistics Norway (2016)) and self-reported budgets, when available, were used.

3.3.2 DEFINITION OF THE SURVEY TO NORWEGIAN USERS OF GREEN SPACE (PAPER II)

The survey to Norwegian green space users was designed to assess quality perceptions of users, in the sense of 'meeting/ exceeding expectations' and relate perspectives on quality to visiting green space. Insights into motivation for users' green space visits can enhance the choices made in green space management so that the supply of green spaces coincides with user preferences. A series of considerations have been made to develop a short survey, consisting of five questions (excluding sociodemographic questions).

The first consideration was on the type of green space visited. A wide variety of types of green spaces exist within metropolitan areas. To allow for a single question about the perception of quality of green space, the nearest green space was used. On the one hand, a special purpose for a visit or a special attractiveness that the green space possesses, influences the time spend to get to that green space. On the other hand, an everyday visit of a green space is more focused on the happenings of the space than the setting of the space itself. Convenience provides for a pleasant stay at least in the everyday visit of a public urban green space and the nearest space suitable for the required purpose is visited (Tessin, 2008). The activities carried out within the nearest green space visited were used as a proxy for the type of space and also as an indicator of the quality of space.

The second consideration was on the activities carried out. The activities looked for were optional activities, activities that one chooses to carry out in the space. As opposed to necessary activities, that someone must do (e.g. walking to work or the shop). For these activities to happen the conditions should be optimal. Optimal conditions link together the different parts that shape green space, value qualities and those related to technical quality, to create a quality green space for the individual (Carmona et al., 2008). In this way, the questions were simplified and overall quality perceptions, quality as 'meeting/ exceeding expectations', was used. Furthermore, activities were categorised after motivation. Motivation reflects the intention behind the execution of an activity which in turns influences behaviour, the activity carried out (Ajzen, 2012). The survey relied on perceptions of distance and quality, since perceptions form peoples' decisions, even though studies indicate that perceptions can be incorrect in comparison to observational measures (Bai et al., 2013).

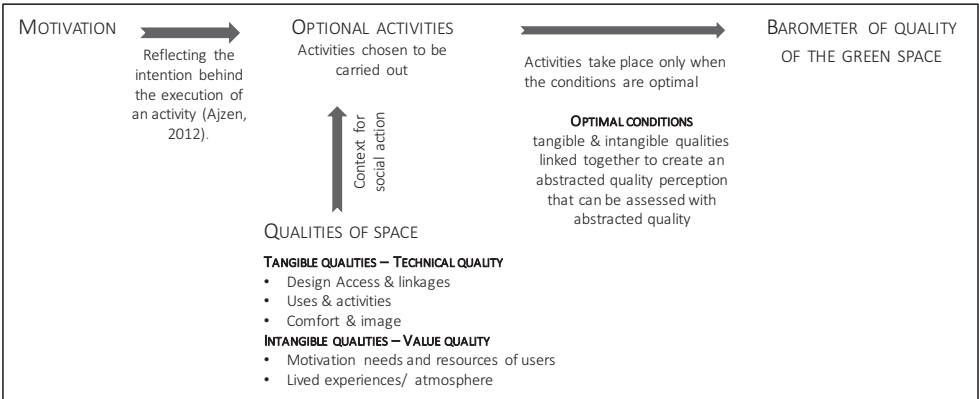


Figure 6: Schematic overview of the thought process simplifying the questions of the survey to the Norwegian population

A literature review was designed to identify activities and their relation to spatial quality aspects. An initial search on quality revealed a large number of articles that discuss quality, therefore, the literature review was defined in relation to the usage of green space, using a combination of keywords “green space use” OR “urban forest use” OR “park use” OR “use of urban green space”, resulting in 282 articles. Initial screening revealed that 30 articles were relevant, however these articles referred to other articles deemed important. The activities identified were compared with activities found to be relevant in Norway. To do that, a review was carried out to get insights into activities in

Norway (performed in Web of Sciences relying on a Boolean strategy, using the keywords “activity” AND “green space” AND “Norway”). This research revealed 12 articles, of which five were relevant for the purpose. In total 72 articles were analysed. Both reviews aided the formulation of the survey questions.

The activities were compared to those identified within the dissertation of Hofmann (2011). One part of the dissertation illuminates the reasons for visiting urban green spaces. Whilst getting a comprehensive overview of uses, the degree of concreteness of the activities varied greatly. Therefore, an empirically based system on users’ green space use was created. The system is based on four categories in which users base their use of space: (1) the degree of extrinsic motivation, (2) the intensity of social interaction, (3) the degree of physical activation, and (4) the degree of intrinsic motivation.

Nordic perspectives on activities focus mainly on their relation to health (Strandbu, 2000; Calogiuri, 2016; Calogiuri et al., 2016; Hervik and Skille, 2016; Calogiuri and Elliott, 2017). In Norway, activities in the outdoors are part of national identity and culture (Strandbu, 2000). Natural environments are close to where people live (Calogiuri, 2016) and the very fact of being outdoors, the pure enjoyment of nature is a motivation for visiting green spaces (Hervik and Skille, 2016). Quality natural environments were found to be crucial in increased use of green spaces (Calogiuri and Chroni, 2014). Experiencing nature is an intrinsic reason for visiting green space, other motives for visiting green space include extrinsic, active or social motives (Hofmann, 2011). In health literature, motives for engaging in physical activities include also convenience, long-term health and body-oriented benefits (Calogiuri and Elliott, 2017). However, these motives seem not to relate to the motives of other activities carried out in green space. Table 5 presents the activities included, related to the four dimensions identified by Hofmann (2011) and one dimensions that identifies none-users.

Table 5: Motivation and activity categories

Motivation	Activity categories
Extrinsic	Walk the dog; collect food; play with children
Social interaction	Visit/ take part in events; meet friends; picnic
Active	Running; other sports; cycling; ball games; other activities
Intrinsic	Quietness; get fresh air; relax; get sun; experience nature
None-Users	Passing through; do not visit green space

The resulting five questions illuminate overall quality perceptions of green space, activities, visit frequency, distance to green space, specific quality perceptions and a set of socio-demographic variables obtained by the service provider. The survey questions are presented in Appendix III.

3.3.2.1 DATA COLLECTION AND ANALYSIS

In order to gain insights into Norwegian citizens' quality perspectives, the use of an independent market research company was considered as most suitable. The survey was administered via telephone in January 2018 and reached out to 1010 adult Norwegians. The five questions were part of a weekly barometer in which, besides the five questions, several other questions were answered by a selected representative sample of the Norwegian society. The interview followed a strict order of questions and answer possibilities and therefore a bias was assumed towards the first mentioned activities. This is why a control survey was launched, using the survey provider Questback. The activities were randomly presented to the participants. This survey was announced on the Facebook page of the University, resulting in similar activity responses. The data was analysed using standard descriptive statistical measurements and linear regression modelling utilising the software program R (R Development Core Team, 2016). Table 6 presents the sociodemographic data of the respondents' as well as the quality perceptions and visit frequency to nearest green spaces.

Table 6: Population characteristics and Pearson chi-square test (χ^2) results for quality and visit frequency and predictor variables derived from a Norwegian study of 1010 adults (significance levels: 0 ****, 0.001 ***, 0.01 **).

Variable	Total (%)	Perceived quality (χ^2)	Visit frequency (χ^2)
N	1010		
Gender		0.219	0.289
Male	49.0		
Female	51.0		
Age		0.598	0.911
18-29	15.9		
30-39	17.9		
40-49	19.7		
50-59	12.9		
60+	33.6		
Education		0.001 ***	0.002 **
Lower	39.1		
Higher	60.9		
Yearly household income		0.75	0.116
Below average	31.4		
Above average	31.7		
More	36.9		
Household with children U18		0.564	0.812
None	72.0		
One or more	28.0		
Degree of Urbanisation		0 ***	0.585
Urban (> 50,000)	38.7		
Suburban (5,000 – 50,000)	31.2		
Rural (< 5,000)	30.1		
Region		0.005 **	0.42
Oslo	12.1		
Northern and Central Norway	23.4		
Eastern Norway	36.4		
Western- and Southern Norway	28.1		
Distance	(N=936)	0.004 **	<0.001 ***
< 300m	40.6		
300m – 5km	50.5		
> 5km	7.9		
Frequency	(N=936)	<0.001 ***	-
Several times a week	31.7		
weekly	34.7		
less	33.5		
Quality	(N=970)	-	<0.001 ***
Good	68.1		
Average	24.9		
Bad	6.9		

3.4 QUALITATIVE STRAND: ACTORS AND SUBSTANCE (PAPER III)

3.4.1 DEFINITION OF THE CASE

Green space management is not only performed in consideration to the structural organisation. As described, besides the dimensions explored on the organisational

structures, place-keeping is collaborative; activities are inclusive and have connected roles in keeping quality green space in a long-term perspective. Processes are rooted in developing, negotiating and sharing collective quality understandings. Without an understanding of the quality preferences, spaces might be kept that are not corresponding to local user needs. It is inevitable to address the dimensions inherent in management itself; the dimension of governance, where different and also conflicting demands, ideas, wishes of society for green space are made sense of, through a set of processes and practices (Carmona et al., 2008; Dempsey and Burton, 2012). This is certainly important in Norway and its tradition of involvement of citizens in the upkeep of spaces. The actors involved in the arrangement, the governance of green space, bring their substance, their quality perceptions into these arrangements and place is essentially created through the stories told the experiences and relations and the actual space.

The analysis of the quantitative set of data aided the selection of the case. Volunteering was reported as relatively common in Norwegian green space management arrangements (half of the green space managers in the survey reported to relinquish their responsibility). And yet, the individual manager was found to be key to facilitate volunteering initiatives, and in acting within a strategic management approach to ensure quality in green places. These findings determined the selection of the case study area.

3.4.1.1 THE CASE AREA, ØYA

Øya, translated to island, is situated in the Modum municipality, a medium sized municipality (around 14 000 inhabitants) in Viken county. The island is just a few minutes away from the town centre.

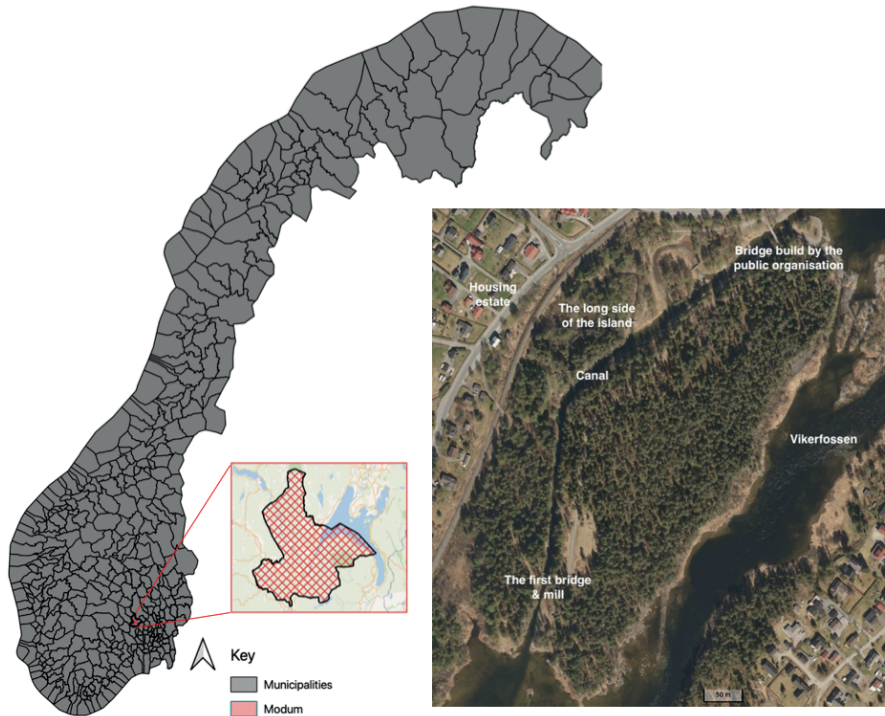


Figure 7: The case area Øya, in Modum municipality, Viken county
 (Map produced in QGIS3.12; Picture source: Norgeskart.no)

Øya has a rich history, the area served as grazing grounds, a waterpower driven mill operated from the 1850s to 1899, until it burned down. Timber was transported along the lake and that, combined with the growing timber industry, was the reason for three developments of the fall. The first development was in 1909, where a less steep fall was created, around 1930 and in the 1950s. Not the least it served recreational purposes mostly for the residents within the nearby housing estate, established in the 1950s. The island now provides habitat for a variety of animals from fish over birds to small animals and even moose has been spotted here. The history of the space is rooted in those involved in creating place. The great grandfather of the deputy of the fishing organisation helped with building the mill. His father was an artist using Øya for his naturalistic paintings. The deputy of Rotary grew up in the housing estate and learned to swim in Øya, just like the deputy of the welfare organisation and several users.

3.4.1.2 DATA CREATION AND ANALYSIS

The focus is on the stories told about the place by the individuals, and the dimensions of discourse, a very broad and open concept, is focused on the stories told by the actors involved in the green space management arrangement. The substance of the arrangement, how quality of green space is discussed, is analysed through the Policy Arrangement Approach (Arts and Leroy, 2006).

The stories of the individuals that created place build the base of information for deriving the actors involved, the rules related to and the resources employed. The dimensions are presented in Table 7. The individuals involved in the creation of the island, the cooperation and roles they took on in the process are studied in the dimension of actors. With the dimension of rules, we looked at informal and formal procedures that were embedded in the process. Resources entail skills, material and financial resources that were brought into the process by the actors.

Table 7: The Policy Arrangement Approach and the three layers of discourse

Dimension	Descriptions
Discourse	Understood as the stories told by the individuals; giving meaning for the individuals, comprising problem definitions, normative expressions and strategic considerations
Actors	Individuals and organisations involved – role of the different actors and processes of interaction
Resources	Financial and material resources as well as immaterial skills
Rules	Formal and informal guiding principles within the arrangement

An interview guide was developed with a set of open questions to guide the conversations. The questions were grouped according to the four dimensions of the Policy Arrangement Approach. The interview guide is presented in Appendix IV. The interviews were conducted in Øya, as an every-day conversation with the intention to walk through Øya at the direction of the interviewees. The conversation was guided by the interview guide, to ensure a continuous conversation covering all four dimensions. Walking interviews have proven to be a fruitful way of accessing locals' connections to their surrounding environment (Evans and Jones, 2011).

The contact person in the municipality was the green space manager, who identified the important persons involved in the creation of Øya. The interviewees were contacted via

telephone and email and all were interested in a meeting. Time and dates of the walk were arranged and together with the manager the last week of August, just after the school summer break, was found to be the best time to conduct the interviews.

In order to analyse the stories, qualitative, interpretative analysis of the stories told by the respondents was applied. The transcribed stories were deductively analysed according to three layers of discourse based on Wiering and Immink (2006) translation of Therborn (1999) ideology study. Based on Therborn's differentiation, Wiering and Immink (2006) discriminate three layers of discourse; (1) those that define reality and reveal the truths of actors (ontology discourse); (2) those that describe situations that are desirable (normative statements); and (3) those that lead the way to desirable outcomes (strategic discourse). Our focus on the relevance of quality within the green space management arrangement, limits these dimensions based on the contested nature of quality. The focus is on storylines and meanings about the space, where quality is inherent in each of the stories told by the individuals about the space. The layers of discourse for the individual were compared to unite the quality perspectives in the long-term management of the place.

4 PAPER SUMMARIES

4.1 PAPER I

Public urban green space management in Norwegian municipalities: A managers' perspective on place-keeping

This paper characterises the organisational structures of Norwegian green space management from the perspective of municipal actors in a tactical position, the green space manager. Organisational structures at a given point in time create arrangements of management in Norwegian municipalities. Within these arrangements, different practices and processes build the management of green spaces. An adapted concept of place-keeping is used as an analytical framework to characterise these organisational structures, utilising seven dimensions (local organisation, policies and strategies, funding, evaluations, management and maintenance as well as partnerships).

A comprehensive survey was sent to all Norwegian municipalities in 2017, in which each of the dimensions was characterised through key themes, illuminated through 48 questions. The results reveal that Norwegian green space management faces many challenges. Although Norwegian green space managers foresee an increase in tasks, more green spaces to manage and more visitors, budgets are expected to remain stable, and yet insufficient budgets are reported as the greatest single threat to maintaining green space quality. In addition, half of the managers are unable to calculate their budgets, new facilities are not usually accompanied by a corresponding increase in budget, and the costs of neglecting the upkeep of space are not known. Norwegian green space management seems to be largely operational in nature, with limited focus on a tactical level. This is reinforced by a lack of municipal strategies for managing green spaces, potentially based on tactical and operational expertise. Only one in three of the Norwegian managers has a strategy for green spaces, despite the fact that in the survey, the quality of green spaces was rated more highly when a strategy was in place.

Also, evaluations of visitors' perspectives on the quality green space, rarely take place. Combined with incalculable financial challenges and a focus on operational work, an obvious insufficiency exists which precludes the creation of overall local strategies based on evidence, tactical and operational expertise. Irrespective of centrality level, all

municipalities engage in operational partnerships. Besides this, the centrality of a municipality is not influencing which municipalities have a strategy or involve partners in operational performances. Suggesting that individual managers play a key role in the initiation of green space strategies, in reaching out to the political-administrative interface for acquiring sufficient funding, and to facilitate long-term place-keeping partnerships. Therefore, strategic management is suggested as a possible way to ensure quality green space and the importance role of individual managers is highlighted.

4.2 PAPER II

Does perceived green space quality matter? Linking Norwegian adult perspectives on perceived quality to motivation and frequency of visits

Interactions of people and nature provide well-being and many desirable health outcomes, and overall policy visions aim to achieve well-being and quality of life through quality green space. Such policy guidance supports the emphasis put on green spaces and their role in providing quality of life and well-being for the population. To derive most of the benefits green spaces provide, people need to consciously use green spaces. Thus, understanding how and why residents interact with green spaces nearby and how perceived quality influences public use of green space becomes increasingly important for managers and planners of such spaces.

The prevailing view is that the provision of clean and safe green spaces is particularly crucial for visiting green space. And yet, individual perceptions of green space quality are essential when a user considers engaging in activities. Quality is the overall impression of the excellence of the green space, describing the character of green space. Instead of measuring the quality given by indicators, perceived quality relies on respondents' judgements of quality. Relying on the subjective preferences of the respondent, serving as an indicator of the excellence of green space character more than features of green space.

This national-scale study provides insights into Norwegians' quality perceptions of municipal green space, visit frequency and motivations for engaging in different activities. We applied regression analysis to investigate how various factors affect the outcome variables, quality perceptions and visit frequency from a sample of the Norwegian adult population.

Results reveal that Norwegians perceive their green spaces as having good quality, and higher quality perceptions have a positive influence on green space visits. Half of the respondents visited green spaces out of intrinsic motives in high-quality environments providing fresh air, experiences of nature and quietness. However, from a planning perspective, it is essential to consider that less-reported activity mirrors groups of respondents who visit green spaces the least. Green space features permit different

activities for different groups, and spaces close to home with play equipment are vital for Norwegians with children.

4.3 PAPER III

The creation of a place through local engagement: How to unite multiple perceptions of quality public green space.

Policies are establishing norms for quality green spaces, but setting them up and managing them takes place on a tactical level. Especially in a country, such as Norway, where senior executives enjoy a high degree of autonomy. The actual handling of quality and defining quality likely differs according to the individuals dealing with green spaces. In addition, quality is a contested concept, with an abundance of conflicting interpretations and multiple layers of meaning, relying on a positive connotation. In practice, the definitions and standards defining quality green spaces are debatable, as the values and views of individuals are innate to quality descriptions and might exclude other values. The quality 'models' applied by managers of green space are not free of judgement, as managers often define quality according to technical and maintenance-oriented standards. However, a technical and standardised definition of quality is not always aligned with users' preferences for everyday visits to green spaces. Norwegian municipalities have a tradition of citizen engagement and green space managers rely to a large degree on the responsibility and motivation of individuals. However, do managers, operational personnel, organised and unorganised users have the same perceptions of quality? This paper draws attention to the complex set of quality perceptions within the arrangement of green space management, user initiatives and (green) place. The aim is primarily to describe the creation of a place, as well as to explore multiple perceptions of the quality of public green places.

Using Øya as a single case study, we interviewed formal organisations, individual users as well as various actors within the local management organisation. We applied the Policy Arrangement Approach as an overall analytical framework, where discourses are based on actors, rules of the game and the resources available. In order to create the discourses, we applied ideology differentiation where we distinguished between ontological discourses, normative statements and strategic discourses. We propose that from a management perspective, in the creation of a place five stories have to be considered; (i) identify the bonds to the place for activating the local engagement; (ii) allow for the unforeseen – maybe even take a risk; (iii) find synergies between

stakeholders, (iv) think in long-terms, and (v) as a management organisation – be actively engaged too.

5 SYNTHESISED DISCUSSION

This thesis has investigated quality in public green space management arrangements in Norway from the perspective of actors. Actors include those involved in managing green space, the green space managers in public organisations, operational employees, representatives of organised user groups and unorganised users of space. All three papers included in this thesis reflected upon actors' perspectives on quality in green space, reflecting on the influences of the overall structures on quality perceptions. In Paper I, the perspectives of green space managers on the organisational structures, utilising an adapted concept of place-keeping, are described in a holistic assessment. In Paper II, Norwegian users' perspectives on quality green space are investigated, relying on motivation based activities and an abstracted quality concept. In Paper III, a combined perspective involving users, green space managers, operational employees and representatives of organised user groups deepen the understanding of the creation and keeping of quality green space within a green space management arrangement.

The following sections are devoted to providing a synthesised discussion of the results. The discussion unfolds in two parts, the first part focuses on Norwegian green space management arrangements, drawing from the review on international green space management (chapter 2.3.1), the Norwegian literature review presented in chapter 2.2.4 to 2.2.6, and the findings of Paper I and Paper III. The second part discusses perspectives on quality green space, synthesising all three Papers and drawing from the Norwegian literature review presented in chapter 2.2.4 to 2.2.6 as well as from the spatial quality measures (chapter 2.3.2).

5.1 GREEN SPACE MANAGEMENT ARRANGEMENTS IN NORWAY

Green space management is vital to ensure quality green space and its services in a long-term perspective. This thesis has established a baseline of green space management arrangements in Norway, the relations of quality green space to Norwegian users visits to green spaces and motivation and discusses how municipal processes and practices may have developed and kept quality green space in a long-term perspective.

5.1.1 STRATEGIC TACTICAL AND TACTICAL OPERATIONAL PERFORMANCES

In Paper I, the green space managers revealed positive implications of strategic management on quality green space. Green space managers that report to have a strategy perceive their spaces as being of higher quality and expected quality to be higher in the future, compared to those who do not have a strategy. However, Paper I also revealed that in Norway, green space management focuses primarily on operational tasks, with the majority of employees responsible for green spaces being employed in an operational capacity. Particularly least-central municipalities showed this pattern, with only a few exceptions of more central municipalities. In addition, green space managers, mostly from less central municipalities, reported that they did not manage green spaces or were part of a unit that managed such spaces.

The findings in Paper I suggested that tactical performances, connecting different municipal units, is not sufficient. This left administrators and decision-makers unaware of the task necessary to keep quality green space. This is brought forward by respondents of the survey, who claimed that the third greatest threat to ensure quality green spaces was the lack of green competences. But also through the responses given to the same questions in the 'other threats' option; the importance of the green resource is not understood by administrators and decision-makers and it is difficult to mediate this relation to them. Contradicting to these findings, strategic tactical performances, in the strategic management model (Randrup and Persson, 2009) are considered important for, example to ensure quality green space through connecting operational expertise and values to overall planning. This flow of information from the operational level to overall planning is likely to create synergies within the municipal departments in order to promote green space benefits. This flow of information is reflected in the findings of Paper III. The collaboration between departments is highlighted by the green space manager. Receiving funding is connected to cultural happenings, and applications for funds that included culture or health aspects are more likely to receive funding. And yet, the collaboration between departments is much more than receiving funding, it is about illuminating issues from all perspectives, including the relation of health and green spaces. This is also highlighted in the strategies of Norwegian green space managers (Paper I), strategic aims mentioned by those that have a strategy, related to public health as the most mentioned strategic aim.

In Paper III, strategic performances included the deputy of operations being involved in planning and design decision. As described in Paper I, such involvement was not a common practice in Norwegian green space management arrangements overall. The participation of operational employees in planning allowed for the expression of practical issues, illuminating the practical side. In this way, practical solutions were found and the keeping of places could be simplified. Tactical strategic involvement, merging planning and operations, was a valuable resource. Such performances saved time and money in the operational processes that are necessary to keep space. In Paper III, the mind-set of the deputy of operations revolved around simplicity of maintenance and that in a long-term perspective. The scarcity of both financial and staffing made it necessary to think that way, but also future predictions about population growth and more elderly contributed to this mode of thinking. Also, tactical operational performance was a valuable resource. Maintenance tasks can be decided upon by those fulfilling the task. In Paper III the deputy of operations explains that there is no necessity to involve for example architects and a long process of decision-making as long as things are working. Nevertheless, the relation to and the importance of the green space manager were repeatedly highlighted. The importance of the relationship between the green space manager or other tactical employees and the planning level is reflected in the definitions of managements found in the literature, what green space management ought to include. For instance by Jansson and Lindgren (2012) and Salbitano et al. (2016), describing management as a dynamic process of integrating economic, ecological, political and social aspects in a long-term perspective. The positive implications of strategic management on quality green space found in this thesis prompts to rethink the traditional logic of green space management, where planning and design is happening before the actual management, dealing with existing spaces.

5.1.2 TACTICAL POLITICAL PERFORMANCES

Tactical political performances are mentioned in the findings in Paper I and related to the lack of awareness of political leaders on green issues. In Paper III, tactical political performances relate to firstly, keeping a balance and secondly, an appreciation of things that are done. First, a balance in the applications that need political approval, in the sense keeping a balance of resources that are necessary for the project and what could have been used. The building of the bridge is an example, the green space manager could

have used much more resources to build a 'better' bridge and path, however, a moderate standard is enough. This standard can also be improved gradually at not at once. Secondly, within the municipality, politicians as well as other employees are happy for things that are done and are rarely against projects brought up by, for example the green space unit and initiatives. Political performances, in the review on green space management in international literature, remained unclear in a practical sense. Randrup and Persson (2009) and Lindholm et al. (2016) relate political performance to creating long-term visions and specific strategies. However, such strategic thinking is neither found in the findings of Paper I nor mentioned by the respondents in Paper III.

5.1.3 ORGANISATIONAL STRUCTURES

In Paper III, the possibility to engage in such strategic performances related in part to the organisational structure of the municipal organisation. The green space unit was two organisational steps away from decision-making, being an integral part of the technical unit. As part of the technical department unique knowledge and tools to practical solutions were available. Solutions for place-keeping and for new projects can be found quickly because of this close relation, but also because of the physical close relation. All employees occupied one floor in the same administrative building and questions can be asked and discussed by simply walking over to the person that is responsible or that is knowledgeable on the topic. In the findings of Paper I, most units dealing with green spaces in Norway are two organisational steps away from decision-making. However, in most central municipalities, units are located at level four or three. Supporting this finding is the report on Nordic urban green spaces (Randrup et al., 2020). The potential shift of units being moved down, away from decision-making indicated in the report is however opposed, since in less central municipalities units are situated on level two and the report considered only most central municipalities. Another part that allows for a strong green space unit in Modum municipality (Paper III) was supplied by the responsibility taken by the unit for all green spaces, including graveyards. Graveyards are well-maintained spaces, often spaces of cultural heritage, playing a central role in local communities, not only as a place to commemorate but also as a place for everyday activities (Evensen et al., 2017). Operational performances focus on neatly maintained lawns and other esthetical values accommodating the bereaved and their relatives (Nordh and Evensen, 2018; Quinton et al., 2019), indicating a high

demand of resources for operational tasks. The management in Norway is often in the hands of church councils, with budgets supplied by the municipality. However, as indicated in the findings of Paper III, the operational and tactical tasks performed for graveyards are part of the green space unit and this was a crucial part for a strong unit.

The findings in Paper I indicate that the greatest threat to quality green space were the lack of competences within the public organisation. This finding is supported by Norwegian literature, i.e. Durucz (2014) reports on missing competences. Reporting on a general lack of skills within the green sector, Burton et al. (2014) relates this to a low pay and status of the green sector, however this finding could not be verified. In Paper III people with the right competence in the organisation are highlighted to simplify green space management processes. However, it is not only about the right competences, but also about knowing whom to talk to. The fact that the green space manager has had the position for a long time simplifies management practices, since the knowing of whom to contact for which purpose not just within but also outside of the organisation is a great advantage to simplify and speed up processes.

5.1.4 RESOURCING FOR QUALITY GREEN SPACE: FUNDING

As mentioned, and a key finding in Paper I, green space managers find the lack of finances restricting for management processes. The greatest threat is perceived to be the missing financial resources. However, there are differences according to municipal centrality, as green space managers from urban municipalities are more optimistic and expect number of green spaces as well as the number of visitors to increase and the budget to increase accordingly. Green space managers from rural municipalities are less optimistic and do not expect an increase in budgets following increased facility acquisition. Overall budgets are difficult to calculate, and half of the Norwegian green space managers could not quantify their budgets.

In Paper III, budgets are merged from different sources, including both an operational and investment budget. Invoices of projects within the investment budget are sent to the operational budget and hence appear as income, however, in this way projects and investments have to continue to support operations. Also, tasks carried out for other units are billed and appear as income to the operational budget. In this way, additional income is ensured within the municipality. And yet, within new projects, applications

for grants from the county are an important part of income generation. In Paper I, over sixty per cent of the green space managers sought out other sources than municipal funding. Another important aspect of funding is the resources brought in by the organised user groups. Not only are they utilising their own resources, they are also applying for state funding and other grants. In times of declining budgets these resources are decisive (Kreutz et al., 2014).

5.1.5 A CRUCIAL RESOURCE: THE GREEN SPACE MANAGER

The strategic performances employed by those involved in Øya (Paper III), are not represented in the overall findings in Norwegian management arrangements (Paper I). The prioritisation and operationalisation of overall political aims as well as tactical performances seem to depend upon individuals within the organisation who are interested in green spaces. The same is true for seeking out other sources of funding, in the findings of Paper I, neither the centrality of the municipality nor the placing of the green space unit made a difference in seeking out funding or other sources of resources. In the review on green space management in international literature, strategic performances reflect upon the new role of green space managers as facilitators, as a provider of services related to broader political urban policies (Lindholst et al., 2016; Mattijssen et al., 2017; Jansson and Randrup, 2020). In Paper I, the question is raised about whether the current role of green space managers is sufficient to ensure future quality place-keeping. It seems that agencies of green space management employees within the given organisational structures can make a difference in ensuring quality green space. The conclusion drawn in Paper I, on the important role of individual green space managers in using available resources to facilitate quality green space, also points to the green space managers' new role as facilitator of public involvement. The findings in Paper I suggest, that medium municipalities (CI of 2,3 and 4) are more engaged with their citizens in an operational capacity and yet in each centrality level green space managers are found to have relinquished their responsibility to partners.

Green space managers need to change their role to mobilise the full diversity of residents' perceptions. Thus, green space managers need to be good communicators, flexible and sensitive to the initiatives of users, and adjust to new trends emerging in management and participation (Fors et al., 2020). Strategic management points also to

changing roles, considering however not only adaptations towards citizen engagement, but also towards steering in itself, leading the organisation in the right direction (Randrup and Jansson, 2020). The changing role and the reliance upon initiatives in place-keeping practices indicated in the findings of Paper I and Paper II are validated in the case study. The Øya case (Paper III) provided insights into what created the sense of a place. Five stories crystallised out of the conversations, each forming a significant part of the transformation from space to place and the keeping of place. The organised user groups were motivated to act because of the place they knew, not being taken care of. These bonds to place activated local engagement. The chance taken by the green space manager, with the landfill and the initiative with the bridge and path, was the starting point for the organised user groups to act. One initiative led to the another, creating a synergy effect. The long-term collaboration is based on the continuous voluntary work and the basic upkeep by the municipality. And yet, the formal management organisation and their active engagement and the facilitation of the initiative is a central part of the solution.

5.1.6 LONG-TERM ENGAGEMENT

One important aspect of management arrangements based on initiatives is the long-term engagement or participation of users. Often, such initiatives rely on key individuals. If they leave the participation process the success of the initiative is often at risk (Fors et al., 2020). This is also mentioned by respondents in Øya (Paper III), relating to the enthusiasts that start something and then it is not taken care of. Mattijssen et al. (2018) identified three factors that supported long-term user participation. First, a certain kind of formalisation of the arrangement, the establishment of rules, procedures and organisational structures, encourages continuity. This ensures a certain stability and conformity to laws and regulations. However, a balance is needed to ensure management in preferred ways by the initiatives, allowing for a certain freedom within these structures. Second, a strong adaptive capacity is needed on the side of the involved, to cope with a changing context, external political, socioeconomic and cultural developments over time. Third, public organisation and their supporting role are part of the long-term involvement of users. They provide security through stable policies, protecting spaces and contributing with resources and knowledge.

In Paper III, the formalisation of the management arrangement played an important role, however, the organised user groups organised the upkeep themselves and this led to uncertainties. Communication between the partners seems in part unorganised and the deputy of operations, although satisfied with the effort of the organised user groups, wonders about their plans. Communication has been identified as crucial and techniques to ensure an effective communication between the involved partners is essential (Jones and Stenseke, 2011). The public organisation and their supporting role, including the relinquishing of power, is part of the success of keeping the place. This role stimulates the involvement of the organised user groups and maintains their motivation besides their intrinsic motivations (the bonds to the place). Thereby the municipality, especially the green space manager, also takes on a role as mediator. Disputes may be solved through debates, however often there is a need for a mediator, a respected and trusted person, accessing the bigger picture and recommending as well as deciding upon solutions (Jones, 2011). The adaptive capacity is however in question, the structural context has not changed much, the place is formally secured and the public organisation has had minor changes in personnel in the last years and the green space manager has facilitated for the initiative for the last twenty-five years. A strong adaptive capacity is however needed in terms of the continuous growing nature and the changing of the circumstances in Øya. This is in line with the research of Fors (2018), where the participation in the woodland co-management zone was more affected by the growing woodland than societal changes over time.

5.1.7 THREE LAYERS OF DISCOURSE: STRATEGIC DISCOURSES FOR QUALITY GREEN SPACE

Analysing the perspectives of the public organisation, the organised and unorganised user groups and the stories they have told, revealed strategies which could ensure quality green space. The public discourse revolves around taking responsibility. First taking responsibility as facilitator of initiatives. When an initiative first emerges, it is important to act. Second, taking responsibility as described, in tactical political performances, i.e. the compliance to rules and regulations, and tactical operational performances, i.e. the inclusion of operational employees and support with knowledge and funding. The organised user groups strategic discourse reflects the acting upon interests and collaboration. The unorganised users strategic discourse reflects

communication. The resources close to home, such as Øya, should be more appreciated. In order to do that, the benefits such places can bring have to be communicated. Similarly, communication is needed in the processes of keeping quality green space as highlighted for participation processes in (Fors, 2018).

The green space management arrangement in Paper III presents an arrangement that ensures quality green space. Practices and processes of management are adapted within the given organisational structures to ensure quality green space in a long-term. This does not imply that this is how management ought to be, rather the arrangement exemplifies processes that can ensure long-term quality, managing dynamic green spaces. Referring back to Randrup and Persson (2009 p.35 and p. 37), “It is questionable if ‘a best model for park management’ can be defined”, ... but “if dynamic systems such as parks and green spaces are just maintained, they will gradually de-generate.” Continuing this thought, Randrup and Jansson (2020 p. 193) refer back to the law of extinction (Van Valen, 1973) and state that, in an urban open space management perspective, “relative progress is necessary just for maintenance”. I would like to take up the question raised by Nam and Dempsey (2020) and the reflections on Whitten’s observation, raising the question about who and what parks are for in the 21st century, and reply with a quote from the deputy of the fishing organisation “the municipality that is us... if we do not do something who else will”.

5.2 PERSPECTIVES ON QUALITY GREEN SPACE IN MANAGEMENT ARRANGEMENTS

Quality is a contested concept, in the eyes of the beholder and context-dependent (Reeves and Bednar, 1994). And yet, different quality understandings cannot merely coexist, due to the ubiquitousness, the organisational and public character of the concept of quality.

These characters of quality prompted the investigation into quality in public green space management arrangements in Norway, related to overall structural processes that formed management arrangements and the development of quality in green space management arrangements. The historic overview in section 2.2.4 to 2.2.6 presents four roots of quality and how the literature incorporated these perspectives. The four roots represent the development of quality from the early concept of quality (quality as excellence), quality in evaluations and tools (quality through ‘conformance to

specification'), quality as values (values that exist within users that judge the product and green space managers that use varied values to measure the quality of the product) to lastly, abstracted quality (quality as 'meeting/ exceeding expectations').

Paper I utilises the definition of quality as 'conformance to specification', a technical understanding of quality. Management practices are thereby rather straight forward, directing quality through descriptions and standards for maintenance. Nevertheless, three out of four Norwegian municipalities do not use a system to measure quality. A distinction has to be made according to municipal centrality, more central municipalities were more likely to have a system to measure quality, while the least-central municipalities had no such system. Descriptions used rely in large on a specified standard (Norwegian Standard NS, 3420-ZK, 2016). Users of space, however, do most likely not think in terms of technical descriptions and their quality perceptions are dependent upon individual experiences. The focus of the definition of quality as 'meeting/ exceeding expectations' lies with users' experiences. Thus, evaluations, utilising this definition of quality, could assess individuals' quality perceptions. However, quality in this sense is complex and therefore difficult to assess. Either way, the findings of Paper I reveal that evaluations of visitors rarely take place.

Evaluations can take varied forms of measurement and most contemporary quality measures combine several roots of quality. The spatial quality measures identified in this thesis, define and describe quality of green space using a combination of properties, relating to quality as 'meeting/ exceeding expectation' and quality as 'conformance to specification'. The properties are chosen according to the knowledge of those who are creating and applying the measures and yet some aspects are mentioned repeatedly; appropriate maintenance, accessibility, safety and facilities. These aspects are assumed in the optimal conditions on the findings of Paper II. Paper II exemplifies the individual user's experience determining whether it is a quality green space or not. The paper utilises the definition of quality as 'meeting/ exceeding expectations' relying on several underlying assumptions. The first assumption was made upon the type of green space visited. The second assumption upon the choosing of optional activities that simultaneously served as proxy for the type of nearest space visited and representing the optimal conditions of space, i.e. the linkages that create quality space for the individual, as described. The identification of these linkages relied upon the motivations,

reflecting the intention behind the execution of an activity which in turns influences behaviour, the activity carried out (Ajzen, 2012). In general, perceived quality related positively to the frequency of visits, as are perceived distance and age. Almost half of the sample of Norwegian adults (Paper II) was motivated by intrinsic reasons to visit green spaces, reporting on activities such as experiencing nature, enjoying fresh air or quietness. As the discussion in Paper II suggest, these activities are related to nature. And yet, perceived overall quality did not predict the frequency of visits for groups of respondents that visit green spaces the least.

The findings of Paper I and II suggest that Norwegian green space managers are left in a situation where they may be knowledgeable about the technical quality of green spaces, but lack information from users' needs for everyday visits to green spaces, about their preferences and perceptions of quality. In Paper III, quality green space is discussed in the stories told by the green space manager, the deputy of operational, organised user groups and unorganised users. Green space quality, separated in three layers of discourse, ontological discourses, normative expressions and strategic discourses, reveals how quality is discussed in one arrangement of green space management, based on an initiative of three organised user groups. The normative expressions of the organised user group describe motivations, motivations based on the bonds to place. Their ontologies of discourse revolve around people that take care of the space, the organised user groups the operational employees and the municipality. In the same sense, the unorganised users' ontology of discourse concentrates on the management of place, that the place is taken care of. Their normative expressions relate to the nature and the appreciation of the place. Normative expressions of the public organisation reveals a practical perspective on the issues at hand in combination with a tactical perspective, when the green space manager involves the local users and thus takes advantage of the resources, the people. The ontology discourse of the public organisation revolves around those people, achieving and keeping place together. The five stories, (i) bonds to place, (ii) allow for the unforeseen, (iii) finding synergies, (iv) place-keeping and the (v) formal management organisation, revolve around the discourses of quality in green place. Quality is not something to be pinpointed, it is reached together through the interactions of actors. In this sense quality, as presented

in the diversification of quality, is rather a space of thematising what quality ought to be in the specific green space and green space management arrangement.

5.3 METHODOLOGICAL DISCUSSIONS

5.3.1 REFLECTIONS ON THE THEORETICAL FRAMEWORK AND THE RESEARCH DESIGN

An initial review of the literature with the intention to explore the field of research, revealed a lack of holistic assessments of Norwegian green space management and a definitional ambiguity of the term management and quality. Taking into account this inaccessibility of written resources, the intentions evolved to understanding the surrounding overall structures in which the current management arrangements were produced. In order to do so, the Policy Arrangement Approach was considered as overall theoretical framework. The approach recognises both, structure and agency, in an institutional setting in which local authorities are responsible for the management of green spaces. It was natural to look at both structure and agency, since actors act within their given context, within the organisational as well as societal structures. Both, structure and agency, have been considered to various degrees in literature describing different settings of green space management arrangements (Dempsey et al., 2014; Mattijssen et al., 2017; Fors, 2018; Qiao et al., 2018; Buijs et al., 2019).

Considering the available resources, or rather the lack of resources allowing for a deeper understanding of Norwegian green space management, a mixed method research strategy was considered useful in addressing the overarching aim of this thesis, to investigate quality in public green space management arrangements. With the mixed methods approach, both survey research (quantitative strand: Paper I and Paper II) and case study research (qualitative strand: Paper III) were applied utilising aspects of the overall theoretical framework. The explanatory sequential design, the quantitative strand is followed by a qualitative strand, allowed for deepening the understanding of the characteristics that contribute to preserving quality green space in Norwegian municipalities, overall quality perceptions and the relation to visitation of green space and insights into strategies for safeguarding quality green space. The methods applied in both strands were suitable on addressing the research questions and contributed together to the overarching aim of the thesis. The research strands in this thesis were guided by constructivism paradigm, creating knowledge with the respondents. The

realities of the actors, an integral part of the Policy Arrangement Approach, cannot be separated from, for example, the organisational structures (Guba and Lincoln, 1994).

The theoretical framework allowed for a holistic perspective, zooming out to overall structural processes that formed management arrangements and the development of quality and first, to characterise Norwegian operational structures, the rules and regulations, from green space managers' perspectives and second users' perspectives on quality green space that is created for them (actors and organisation). In Paper III the Policy Arrangement approach is used to zooming in to one green space management arrangement, focusing on the entire arrangement but especially on discourses (actors and substance). The case study in Paper III utilised the theoretical framework, considering the stories told, reflecting discourses of actors. These stories revealed the organisational structures, the rules and resources and the agency, the actors and their discourses. The analysis of the discourses in three layers allowed for a different viewpoint on quality, rooted in ontology, normative expressions and strategic discourse thinking. In this way, the actors' stories and conclusions drawn were anchored in the three layers, three perspectives of quality.

5.3.2 REFLECTIONS ON THE QUANTITATIVE STRAND

Paper I utilised an adapted concept of place-keeping to characterise Norwegian organisational structures. Place-keeping was developed to extend practical and research knowledge on processes and factors that influence the environment in which municipalities facilitate the long-term management of green spaces (Dempsey et al., 2014). The concept was thus considered valid to characterise Norwegian green space management arrangements. The concept, although not specifically mentioned, was also applied in the report on the state of UK public parks (Neal and Community First Partnership, 2016) and in the Swedish study on green space management (Randrup et al., 2017). Both studies influenced the survey design and questions in this thesis. The application of the adapted concept of place-keeping worked well a national scale, although the adapted dimensions (governance and policy), should be considered as they have proven to be of importance in the findings of Paper III. Governance arrangements and their practices and processes are necessary to keep quality green space in the 21st century. In the same sense and as highlighted in the findings (section 5.1), tactical

political performances (the policy dimension of place-keeping) plays an important role for the keeping of quality green space.

Considering the complex municipal management environment, as the literature review on Norwegian green space management suggested, a selection bias should be paid attention to. Even though the invitation to participate on the survey was sent to all municipalities, more central (CI 1, 2, and 3) ones primarily answered the survey. This was expected since less central municipalities might lack own management units for green spaces, responsibilities for green spaces might be undefined and in general less central municipalities have lesser personnel. This indicates that urban spaces might not be prioritised, and such municipalities might not consider having urban green spaces. In addition, the outreach to specifically green space managers in in key positions related to green space management might not have resulted in reaching the right person. Therefore, results and relations established might have been slightly different by reaching out to other respondents. The large number and the understandability of the survey questions might have prevented completion of the survey. To ensure understandability, a preliminary version of the survey was tested and discussed with a pilot group during a one day workshop. Owing to the discussion, questions have been changed and some more have been added, due to the interest of the participants. The revised survey was then sent again to the pilot participants in its online for a final revision.

Limitations of the statistical analysis, as described in Paper I, point towards a careful interpretation of the data, because of the lower response rate. However, the repeatedly occurring pattern showing significance between the variables 'having a strategy' and 'mapping green spaces' should be in focus. Therefore, the role of strategic management is deemed as important in ensuring quality green space.

Paper II related perspectives on quality green space to visitation and motivation, relying on several considerations. The reliance upon these considerations might have several implications. The relations of activity and type of space visited are reliant on interpretation and linkages of activity and space might have been misinterpreted. For example, activities such as playing with children does not necessarily take place in playground setting. The term nearest green space might have been difficult to relate to,

although the introductory text described the green space looked for, in general, there is no universally accepted definition of green space, and Norwegian municipalities define spaces differently. The strict order of answer categories in the question about activities, that was followed by the research company might have induced a bias towards the first mentioned activities. The control survey launched, with randomly ordered answer categories, indicated similar results of the activities mentioned, indicating the insignificance of the order of categories.

Potential predictor variables included in the analysis were sociodemographic characteristics of the respondents and a potential information bias, due to the separation of participants into discrete groups might have led to misclassification. There is always a risk of aligning respondents into the wrong groups. In the analysis, several grouping options have been performed for each of the categories to minimise information bias. Nevertheless, the overall quality perceptions and relations to activities and motivation derived gave insight into quality perceptions of groups of users, indicating that not all respondents are in need for quality green space. However, specific insights into what the non-users and those least represented perceive as quality and what quality entails for those motivated by other motives should be researched further.

5.3.3 REFLECTIONS ON THE QUALITATIVE STRAND

Combining the findings of Paper I and Paper II (the role of the green space manager, strategic performances, the tradition of initiatives and the quality perspectives that do not necessarily match for all user groups), an initiative based arrangement of green space management was chosen to deepen the understanding of quality perspectives within and initiative based green space management arrangement. The case study (Paper III) was designed to deepening the understanding of how green space managers, operational employees, unorganised users and organised user groups collaborate within a green space management arrangement and how the different quality perceptions are played out in managing green space. The third research question was exploratory in nature and, although the case study was small in scale, rich data material through face-to face interviews within the green space was created.

Trustworthiness was conceptualised to parallel criteria for “conventional” quantitative studies by (Lincoln and Guba, 1986). Trustworthiness thus ensures rigor in qualitative

research. Criteria contributing to the rigor in the case study relate to credibility and transferability. Considering credibility, the writing of a field diary was carried out. The field diary notes included data on weather, users and their usage as well as operational performances and notes on the one day accompanying the green space manager. The notes allow for a wider picture of the green space arrangement in Øya and notes were cross checked with the stories told. Relating to dependability and conformability, the initial interpretations have been counterchecked by the co-authors of the Paper. Transferability refers to the description of the case study in detail (Guba and Lincoln, 1989). The stories told have been reproduced and combined, so that a more complete picture of the green space management arrangement in Øya was drawn, allowing the reader to decide whether the conclusions are transferable to another context.

Reflecting on the time frame and the position of the researcher, establishing credibility with the organised user groups in form of participating in, for example, the one day cleaning initiated by Rotary, could have established a deeper relationship and build trust. Such participation and relation building could have enriched the data created. Further individuals within the organisation could have been identified and relied upon in the interpretation. Also, non-users have not been interviewed and their opinions and stories might have enriched the data creation and interpretation in relation to the strategies for quality green space.

6 CONCLUSIONS

The results of the Norwegian green space management review indicated sparse research contributing to a holistic assessment of Norwegian green space management. The literature reviewed revealed also a complex system for ensuring quality green space. A tradition of involving citizens in operational work exists in Norway and quality is considered as the substance of green space management arrangements, the target to be reached in practices and processes and for users. This thesis has contributed both to theoretical and empirical knowledge, representing an original contribution that provides insights into quality in public green space management arrangements, the relation of users' quality perceptions and motivation to use of green space and points to processes of municipal management that can preserve quality of green spaces.

At theoretical level, the development of quality understandings, the four roots of quality in a Norwegian context contributes to a theoretical understanding of the concept of quality in green space management arrangements. By discussing the development of quality, linking green space management processes to structural transformations that institutions have experienced, consequences for green space management processes as well as quality assessments are highlighted. Accordingly, this thesis strengthens the definition of green space management, towards a strategic management perspective, by prompting to rethink the traditional logic of green space management, where planning and design is happening before the actual management. The findings stress the need for strategical tactical, tactical political and tactical operational performances.

At the empirical level, new evidence is provided that was missing from the field. This thesis characterises Norwegian green space management providing novel insights into municipal practices that keep quality green space and building a baseline for assessing green space management holistically, adapting the concept of place-keeping. The findings reveal that practices and processes performed by Norwegian municipalities face many challenges. Strategic management and individual green space managers, as opposed to the role of municipal organisation, are found to be key for quality place-keeping. Correspondingly, findings towards the relation of users' quality perceptions and motivations to use, with evaluation of the positive relation of quality perceptions to increased visits of green space, showed that perceived quality overall predicted green

space visitation. However, quality did not predict the frequency of visits for groups of respondents that visit green spaces the least.

This thesis contributes to the bringing together of quality perspectives in an initiative based green space management arrangement. Quality is not something to be pinpointed, it is reached together through the interactions of actors. In this sense quality is rather a space of thematising what quality ought to be in the specific green space and green space management arrangement. Utilising ideology differentiation, distinguishing three layers of discourse to examine the underpinnings of quality, a novel contribution to the field of green space management is presented. The differentiation reveals five stories to create and keep place, indicating that quality green space is created when actors, both public organisations and organised user groups contribute in a continuing process of discussions and shaping. The resources made available by the actors and not at least the understanding of discourses during the long- time process is essential for the success of keeping quality green space.

6.1 OUTLOOK – MOVING FORWARD

The broad scope and the complexity of factors involved in green space management arrangements, creating and keeping quality green space, clearly demonstrate a need for more research. In terms of the review on Norwegian green space management (chapter 2.2.4 to 2.2.6), the challenges with the execution of the review and the mixture of methods applied was both challenging and most likely not comprehensive. Nevertheless, the literature reviewed allowed for an understanding of the diversification of quality in Norwegian green space management. More literature has been analysed in the review, although excluded due to the aim of the review. Articles, guidelines, reports and theses identified include a wealth of information that opens for further research considering for example perspectives of green space planning.

The managers' survey (Paper I) established a baseline for Norwegian green space management. A repetition of the survey, considering the limitations mentioned, would create further knowledge on changes and the status of management arrangements in Norway. Moreover, the complexity of factors that influence management organisational structures and their influences on people within these structures revealed that green space managers are key individuals and facilitators for the keeping of quality green space. Further research into the

organisational structures, constrains or encouragement structures might have for individual green space managers, operational employees and others concerned with green space could provide insights into these dependencies. Such insights could guide further developments of practices and processes in municipal place-keeping. Also, the positive implications of tactical political performances in green space management arrangements and the lack of literature on the topic indicates a need to further research the implications of such performances on the processes of place-keeping.

In relation to the survey to Norwegian users (Paper II) and the serious of considerations made to develop a short survey, quality remained unspecific. Intrinsically motivated activities are carried out in high-quality environments, however, quality perceptions of groups of respondents that visit green spaces the least did not predict the frequency of visits for playing with children and walking the dog. The study on Norwegian users could not add more knowledge on the relation of these groups and the quality of spaces visited. From a public health perspective, green spaces and their services are vital to increasing health and well-being and further research could provide a better understand of the relations of quality green space and motivation of these less reported groups.

The Øya case study (Paper III) has provided knowledge on an initiative based green space management arrangement. The detailed interviews conducted revealed valuable insights into the organisational structures and agency of the green space manger, the deputy of operations and the representatives of the organised user groups. In Norwegian green space management arrangements, it is relatively common to involve organised user groups, therefore, it would be interesting to conduct further studies in similar settings to deepen the understanding of such arrangements, both in terms of structure and agency. In this sense, strategic political performances are only touched upon in Paper III and remain unsure in practice. Further research on the implications of such performances, in a green space management arrangement, could provide valuable knowledge and inform practices and theory on strategic management.

The findings of Paper III revealed also, that the keeping of quality green space is partly based on the organisational structures, the green space unit as integral part of the technical unit and the uniting of all green resources within the unit, including graveyards. Further research into the relation of the organisational structures to

management process and practices could support the relations found. Moreover, prolonged engagement with the participants in such arrangements could reveal further insides into 'bonds to place' and 'finding synergies' as well as to 'long-term management'. Lastly, the fact that the representatives of the organised user groups are of an older generation and the lack of recruiting as discussed, raises the question of continuity of the green space management arrangement and the keeping of place.

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ERRATA

PhD candidate: Claudia Fongar

Thesis: Public green space management arrangements in Norway Perspectives on quality green space

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Page	Line	Original text	Corrected text
2	2	Illuminates	illuminates
3	9	for example, (Van Herzele and Wiedemann, 2003; Giles-Corti et al., 2005; Dempsey, 2008; Ries et al., 2009).	as for example Van Herzele and Wiedemann (2003); Giles-Corti et al. (2005); Dempsey (2008) and Ries et al. (2009).
8	7	on the quality, The actors	on the quality. The actors
9	12	Qiao et al. (2018); (Quinton et al., 2020).	Qiao et al. (2018) and Quinton et al. (2020).
9	20	The duality of structure is visible here (Arts and Leroy, 2006) are agencies influencing	The duality of structure is visible here (Arts and Leroy, 2006), are agencies influencing
17	3	to achieve the consistent production quality	to achieve the consistent production of quality
22	13	Strategies, ideas or meanings based on the green space managers knowledge form ways to overcome daily work problems	Strategies, ideas or meanings based on the green space managers' knowledge, form ways to overcome daily work problems
23	26	and (Douglas et al., 2017) demonstrate.	and Douglas et al. (2017) demonstrate.
23	27	The focus on in the survey is on existing	The focus of the survey is on existing
24	9	work relating to those three levels	work, relating to those three levels
32	5	that are able to provide services and inviting for citizens	are able to provide services and are inviting for citizens
36		Figure 4	Figure 4 including the relation to the Papers
42	1	quality, since, perception forms	quality, since perceptions form
42	12	To do that a review	To do that, a review
48	4	as a every-day conversation	as an every-day conversation
55	2	In Paper I the green	In Paper I, the green
55	9	In addition, green space managers mostly from less central municipalities reported that they did not managed green spaces or were part of a unit that manages such spaces.	In addition, green space managers, mostly from less central municipalities, reported that they did not manage green spaces or were part of a unit that managed such spaces.
58	4	This findings is supported	This finding is supported
58	6	relates this to the a low pay	relates this to a low pay
59	28	(Randrup and Jansson, 2020) .The changing	(Randrup and Jansson, 2020). The changing
71	29	might have, for individual green space managers,	might have for individual green space managers,
80 (83)	(16)	ORGANIZATION, W. H. 2017. Urban Green Space Interventions and Health: A Review of Impacts and Effectiveness.	World Health Organization (WHO) 2017. Urban Green Space Interventions and Health: A Review of Impacts and Effectiveness.

PAPERS

PAPER I

Public urban green space management in Norwegian municipalities: A managers' perspective on place-keeping

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Abstract

This study establishes a baseline for green space management in Norwegian municipalities. The aim of a comprehensive survey sent to all Norwegian municipalities in 2017, was to describe green space management and compare municipal differences in terms of place-keeping. Place-keeping, the responsive long-term management of public spaces, is used as an analytical framework to characterise the factors that influence Norwegian municipal green space management. The survey assessed place-keeping in terms of policies and strategies, funding, evaluations, management and maintenance as well as partnerships. Although Norwegian green space managers expect budgets to remain stable, they foresee an increase in tasks, more green spaces to manage and more visitors. To maintain the quality of green spaces, managers face difficulties such as incalculable financial challenges and a lack of techniques for evaluating and measuring the quality of green space. Norwegian green space management seems to be largely operational in nature, with limited focus on a tactical level. This is reinforced by a lack of municipal strategies for managing green spaces, potentially based on tactical and operational expertise. Only one in three managers reported having a strategy to maintain green spaces, despite the fact that in the survey, the quality of green spaces was rated more highly when a strategy was in place. Strategic management is suggested as a possible way to ensure quality green space. Individual managers appear to play a key role in the initiation of green space strategies, in reaching out to the political-administrative interface for acquiring sufficient funding, and to facilitate long-term place-keeping partnerships.

Keywords: Place-keeping; Strategic green space management; Norwegian green space management

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1. INTRODUCTION

Healthy and well-managed urban green spaces contribute significantly to urban inhabitants' quality of life. Some of the best-known benefits range from positive effects on mental health (Richardson et al., 2013), reduction of stress (Grahn and Stigsdotter, 2010) and alleviation of mental fatigue (Kaplan, 2001), to improved health (Picavet et al., 2016) and increased physical activity (Richardson et al., 2013). Other services of urban green spaces include improvement of local climate, air quality (Pugh et al., 2012), and carbon sequestration (Townsend-Small and Czimczik, 2010), along with supporting services such as biodiversity and habitat provision (Sandström et al., 2006). Although there is a growing consensus among scholars and policymakers about the benefits of urban green spaces, management of these spaces is under pressure. Rising urban density leading to the use of green spaces for building projects (Haaland and van den Bosch, 2015) is one factor, compounded by the limited resources allocated to green space management (Lindholst et al., 2017; Neal and Community First Partnership, 2016). Inadequate management negatively affects green space quality, yet quality is fundamental for attractive, publicly valued, sustainable and profitable green spaces (Dempsey and Smith, 2014). For cities to benefit from green spaces, it is vital to keep these spaces functional and of high quality.

To our knowledge, holistic assessments of Norwegian municipal green space management are sparse, and the value of long-term management is often underestimated in the Nordic countries, including Norway (Randrup and Persson, 2009). This creates a gap in knowledge by discounting potentially fundamental contributions from managers and institutions on how to keep the quality of green spaces.

In Norway, green spaces with original nature and urban forests are diminishing while more cultivated and sealed surfaces are increasing in cities (Thorén, 2010). Natural areas are poorly safeguarded (Thorén, 2010) and access to and quantity of spaces tends to overshadow actual quality (Gundersen, 2004). Responsibility for the management of green spaces is traditionally taken by local authorities (Meland, 2006). Municipal institutions have, however, been subjected to internal organisational changes and reforms in response to new public management and governance (Øgard, 2014) creating

more independent agencies and subordinating organisational units, including those responsible for green spaces. These units are now several organisational steps away from political leaders (Lægneid et al., 2013; Persson and Randrup, 2006). In municipal institutions, responsibility for green space management is unclear and varied. It might be spread over different departments or units (Stokke et al., 2009) and is only one of many tasks performed by public employees (Meland, 2006) who often lack competence (Durucz, 2014).

Apart from municipal organisational diversity, differences in green space management arise from geography. Norway has vast natural environments spreading through eight climatic zones. Just above 2 200 km² (1.7%) of Norway's total land area of 323 809 km² is considered urban (Statistics Norway, 2018a), yet 80% of Norwegian residents live in these areas (Statistics Norway, 2018b). The population is expected to increase from 5.3 million currently to 6 million by 2040, with the largest increase in these urban areas (Syse et al., 2018). With this in mind, the involvement of private and voluntary sectors in managing green space becomes increasingly important, as involvement of individuals has great significance in securing and facilitating the green resource (Stokke et al., 2006; Stokke and Falleth, 2010). However, technical standards and registries – which might neglect user perspectives on the functions and effects of green space – are dominating green space upkeep regimes (Tordsson, 2008).

The concept of place-keeping provides a framework for keeping quality green space in a long-term perspective (Dempsey and Smith, 2014). Place-keeping is a way of organising management and a well-coordinated place-keeping process establishes the basis for potential place transformation. The concept was coined by Wild et al. (2008) and elaborated by Dempsey et al. (2014), extending practical and research knowledge on processes and factors (policy, funding, design and management, evaluation, governance and partnership) that influence the environment in which municipalities facilitate the long-term management of green spaces.

Place-keeping utilises a new institutionalised perspective, looking at the local organisation and managers' perceptions. In this article, we establish a baseline for green space management in Norwegian municipalities, by describing managers' perspectives on place-keeping. The key research questions addressed are: (1) *What are the*

characteristics of Norwegian place-keeping? (2) How do Norwegian municipalities differ in their place-keeping activities?

2. PLACE-KEEPING IN NORWAY

Place-keeping provides an analytical framework to characterise Norwegian green space management, the organisation and managers' perspectives. We acknowledge that other analytical frameworks exist, such as the Policy Arrangement Approach (Arts and Leroy, 2006). This approach considers four interrelated dimensions, rules of the game, actors, discourses and resources. But, place-keeping was considered a suitable framework for this study, as it provides a holistic approach to characterising the actual factors, the resources, that influence Norwegian municipal management on a national scale. Through the lens of place-keeping, the environment that managers have at their disposal is identified. The relations between actors in place-keeping are difficult to comprehend within the breath of the characterisation of municipal resources aimed for in this article. With this in mind, our study does not fully represent all aspects of place-keeping factors. The analytical framework utilised is visualised in Figure 1.

Figure 1: Analytical framework: Adapted place-keeping concept (Source: Dempsey and Smith, 2014 (adapted))



Focusing on existing green spaces and their quality; the design and management factors are limited to maintenance, as one part of the management process. Also, governance, “conceptualised as the sphere of relations between government and other actors in civil society or non-governmental sectors” (Smith et al., 2014a), is about the interactions

between those involved and their roles and relations. Because these relations are complex, we focus on existing partnerships within municipalities in the article, describing managers' assessments of funding, policies and strategies, evaluations, partnerships, management and maintenance, as well as quality as a result of the place-keeping process. The dimensions are assessed through a series of key themes presented in Table 1 and discussed in the following sections.

Table 1: Analytical place-keeping dimensions and key survey themes

Analytical dimensions	Key themes in the survey
Local organisation	<ul style="list-style-type: none"> • Green space management organisational distance from political decision-making • Staff numbers working with tactical, operational and administrative tasks • Total amount of, and the development of green spaces over the last three (2014–2016), and next three years (2017–2020) • Changes of visitors in the coming years
Policies & strategies	<ul style="list-style-type: none"> • Written strategies for managing (developing) green space • Aims related to green spaces strategies
Funding	<ul style="list-style-type: none"> • Operational budgets, past changes and future predictions • New facilities and increased assets • External sources of funding • Estimates of costs created through neglected upkeep of space • Sufficient budget to keep quality green space
Evaluation	<ul style="list-style-type: none"> • Visitor monitoring and satisfaction • Mapping of green space
Partnerships	<ul style="list-style-type: none"> • Volunteers involved in upkeep of green space • Volunteers that engage in green space (re-)planning or (re-)design phase and how they are involved
Management & maintenance	<ul style="list-style-type: none"> • Maintenance regimes, e.g. in-house and/or outsourcing • Quality measurements/descriptions
Quality as the result of place-keeping	<ul style="list-style-type: none"> • Managers' overall quality perception of green space, past changes and future predictions • Threats to green space quality

2.1 Local organisation

As stated in the introduction, Norwegian municipalities have been reorganised, and green space organisational management units have moved further away from political decision-makers (Persson and Randrup, 2006), creating a more varied and complex management situation. This also means that communication within units, departments

and with politicians has changed. Tasks within municipalities are varied and, considering the strategic park-management model (Randrup and Persson, 2009), three interrelated activity levels should be considered (policy, tactic, and operation) to ensure effective management. Municipalities were found to focus on operational tasks (Randrup and Persson, 2009) and considering the described differences between them, more central municipalities are more likely to have more resources for the entire management process. Centrality differentiates municipalities based on if they are rural or urban, weighing the importance of distances to workplace and service functions from home. Norwegian municipalities are thereby grouped into six groups, ranging from most-central municipalities, to second-most central, middle-central 1, middle-central 2, second-least central and least-central municipalities (Centrality is further explained in section 3.2).

The types of spaces managed differ between municipalities. In the article, we use “green space” as an umbrella term, defining green areas as spaces that are publicly owned, where management is the responsibility of the local authority, access is free for all, and some type of recreational amenity is available (Henderson, 2013). Following the legal framework for planning and building in Norway (Norwegian Plan and Building Act 2008), we classified green spaces in recreational areas, spaces along waterways, parks and natural areas. An additional three categories were deemed important for resource allocation especially within middle-central municipalities, resulting in seven categories which include graveyards, school playgrounds, and trees.

2.2 Policies and strategies

Legal frameworks such as the Norwegian Plan and Building Act (KMD 2008), guidelines and local regulations build the context for managers. These frameworks range from, for example, the safeguarding of cultural heritage and inclusive design to protecting biodiversity (Norwegian Nature Diversity Act 2009) and stormwater management (Norwegian Water Resource Act 2000). Further, municipalities are required to ensure the health of inhabitants (Public Health Act 2011), which can be operationalised, besides other measures, through quality green space provision (KMD 2016). However, the implementation and follow-up of policies and the development of strategies for green

spaces are dependent upon the individual municipalities, managers and resources available (Stokke et al., 2009).

2.3 Funding

Green space budgets are financed through revenue funding allocation within the local authority department. As a consequence of fragmented responsibilities for green spaces (Randrup and Persson, 2009) and the flow of funds from different departments needing a great deal of organisation and administration (Meland, 2006), the estimation of budgets is difficult. Investment in new spaces or developing existing spaces can increase running costs, which frequently happens without increasing budgets for operational work or extra resources (Kreutz et al., 2014). Some municipalities might seek out external funding at different levels, through public sector grants, private sector partnerships or third sector resources.

2.4 Evaluation

Evaluations give a clearer picture of the quality of spaces, inform decision-making (Stokke et al., 2009), enhance public spending and improve processes and actions of place-keeping (Smith et al., 2014b). Municipalities are required to maintain awareness of the opportunities green spaces offer and how these spaces influence public health (Miljødirektoratet, 2014). Having a better understanding of green space benefits, based on evidence, can facilitate management practices and policy directives to improve quality and public health. Such evaluations are often based on surveys monitoring the results of place-keeping, such as user satisfaction (Smith et al., 2014b). A variety of indicators of the physical qualities of green space have been put forward to aid decision-making since the 1980s (Elvestad et al., 1984; Gabrielsen and Eik, 1992; Guttu and Thorén, 1999; Miljødirektoratet, 2014). Mapping of green space is also put forward as a valuable tool for assessing green space physical structure, benefits, potentials and many more related values (Salbitano et al., 2016).

2.5 Partnerships

Partnerships are “an association of two or more partners with a shared responsibility for the long-term management of a place” (Burton and Mathers, 2014, p. 78), and can be

effective in public space management (de Magalhaes and Carmona, 2009) and in advancing public policy (Stokke et al., 2009). The European Landscape Convention supports partnerships involving the public, by engaging them in decision-making processes at a tactical level of management. Although this convention stipulated a legal requirement in planning processes in Norway, the law does not specify who is entitled to participate, nor the extent of participants' involvement (Falleth and Sandkjær Hansen, 2011). Each municipality decides how to involve inhabitants. Operational management is based on agreements and partnerships rather than on strict controls (Stokke et al., 2009) and volunteers play an important role in green space maintenance (Stokke et al., 2006).

2.6 Management and Maintenance

Maintenance refers to the operational side of management in the upkeep of green spaces. Traditionally, maintenance is in the hands of municipalities; however, management and steering mechanisms are becoming less direct, measuring performance in terms of aims, results, quality control and competition (Øgard, 2014) which increases the use of standardised maintenance routines (Leiren et al., 2016). This perspective is based on technical concerns, neglecting the values of nature for the individual and society (Tordsson, 2008). In Norway, the standard mainly used is the NS 3420-ZK:2016, containing specification texts for building, construction and installations, and ZK refers to the operation and maintenance of parks and gardens. Green space quality descriptions are used to communicate a shared vision of quality in green space and are part of responsibility-sharing in keeping green spaces. Making use of standards is one way to operationalise quality, along with other tools such as the Nordic Green Space Award (Lindholst et al., 2016), or the UK-based Green Flag Award (Green Flag Award, 2018).

2.7 Quality as the result of place-keeping

Overall municipal policy visions may highlight green spaces as vital for achieving quality of life and well-being for local inhabitants. Human engagement with green space provides many desirable health outcomes (MEA, 2005), and for keeping these benefits and services, quality management is vital, expressed as place-keeping practices.

Quality is a term based on an abstracted concept, however, with a positive connotation (Dahler-Larsen, 2008). Quality is both, descriptive and perceptive. On the one hand describing the characteristics of a feature, e.g., the material in question (vegetation) and its condition. On the other hand, something that is experienced, based on perceptions and experiences associated with the feature or the sum of features (e.g. the services provided by vegetation; smells, shade, memories etc). This perception of quality provides an overall impression of the excellence of a green space.

Green spaces are managed by public institutions and these define, as an outset what the descriptive quality of a green space is, and how to manage this quality. The public organisations are functional and operational closed systems, thus producing quality in their own terms and within their own evaluations. Quality is conceptualised in technical standards describing quality, a “compliance-to-specification” concept as Reeves and Bednar (1994) describe it. These standards shaped the understanding of quality as an instrument for maintaining tasks (Lindholst et al., 2015b). Besides this technical (descriptive) quality description, in the survey we defined quality in terms of managers’ perspectives and their various understandings of the concept when applied to green spaces, describing the overall perceived green space quality, seen from the managers perspective.

3 METHODS

3.1 Development and distribution of the survey

A preliminary version of the survey was tested and discussed with a pilot group during a workshop in May 2017. Seven green space managers representing six municipalities (most-central to middle-central 1) participated. The revised survey was then sent to the pilot participants in its online form.

The main survey was sent to managers in key tactical positions in departments responsible for parks or green space. Green space managers are viewed as key informants regarding the state of green space management, given their position close to both local politicians and local operational employees. To identify managers, a detailed analysis of administrative structures was conducted and municipal websites were searched explicitly for an indication of units responsible for green spaces. If no such unit

could be identified, we used the municipal website engine, using several search words to identify responsible green space managers. If there was no contact person found, we focused on technical units (identified as relevant units by Persson and Randrup, 2006) and chose the head of the department.

The survey was implemented online and emailed (using an access link) to all 425 municipal managers, identified as key informants, in Norway in October 2017. Participants were given a period of two months to answer the questionnaire. In this period, we sent a total of four reminders, and a final personal reminder to those who had started but not completed the survey.

3.2 Response rate

We received responses from 153 unique municipalities, of which 139 municipalities completed the survey and formed the basis for this analysis. This amounted to an answer frequency of 36% (33% respectively). However, using the centrality index categorisation from Statistics Norway, we had a representative sample of the most-central, second-most central and middle-central municipalities, representing almost 70% of the Norwegian population (Table 2).

Table 2: Responses after centrality index (Høydahl, 2017)

Centrality index	Number of municipalities	Number of inhabitants	Share of inhabitants	Responses
CI 1: most-central municipalities	7	1,028,323	19.6	7
CI 2: second-most central municipalities	23	1,207,202	23.0	13
CI 3: middle-central 1 municipalities	64	1,425,313	27.1	35
CI 4: middle-central 2 municipalities	90	862,188	16.4	29
CI 5: second-least central municipalities	113	491,726	9.4	30
CI 6: least-central municipalities	125	243,565	4.6	26

The centrality index provides a better picture of the situation in the municipality, whether rural or urban, by combining service functions within, and commuting time

from, a basic geographical unit, with weighted numbers to adjust for close service functions and commutes (Høydahl, 2017).

3.3 Statistical approach

To explore the data, we used standard descriptive statistical measurements for each question and its variables utilising the software program R (R Development Core Team, 2016). To test the relationship between managers' perspectives on place-keeping dimensions and the differences in municipalities (explanatory variables), we modelled the survey answers as binary or ordinal variables, depending on the question, using logistic regression in Proc Logistic in SAS 9.4. As explanatory variables in the logistic regression, we used managers' responses about the organisation of their municipality, the use of strategies and evaluation tools, as well as the municipal budget and additional information from Statistics Norway about municipal populations (Statistics Norway, 2017) and centrality (in terms of the centrality index).

First, municipal organisation is represented through the movement of subordinated units within the organisation away from political decision level. This creates a more complex management situation and therefore, the placing of the unit is assumed to influence differences within place-keeping processes. Second, the use of strategies is seen as decisive for place-keeping; therefore, having a strategy was used as explanatory variable (binary variable). Third, evaluation tools are promoted to facilitate quality green spaces and are essential for effective management. We chose to use mapping (an ordinal class variable) as an evaluation tool in the analysis since other tools were not as frequently used. Fourth, although budgets are decisive for managing green spaces, reported numbers were inconclusive, and we based our analysis on municipal budget per capita (covering the gross operational expenditure for recreation according to Statistics Norway, 2016) and complemented with reported numbers when the official statistic was not available. Negative value and zero values were modelled as missing data since it was not possible to assess if these were true values or reflected a lack of reported data.

Score tests were used to control for proportional odds assumptions being upheld for the ordinal models. When the proportional odds assumptions were not upheld, multinomial

regression was used instead of logistic regression. However, since the significant variable and level were the same for both multinomial and logistic models, the results reported are from logistic regression. Odds ratios were modelled as the probability of yes for the binary variables and positive/increasing rankings for ordinal variables. Stepwise selection with an inclusion level of 0.05 and the exclusion level of 0.10 was used to find the most parsimonious models. To test if the selected model was significant and adequate, the log-likelihood ratio test (LR test) and the residual chi-square test were used, and, when appropriate, the Hosmer and Lemeshow goodness-of-fit test. For all reported models with only the model of quality measures as a borderline case, test assumption of the models was upheld. To give a measure of the discrimination capacity of the model, the area under the ROC curve was calculated. These values range between 0.5 and 1, where higher values indicate a higher predictive power of the model.

4. RESULTS

The factors that influence Norwegian place-keeping processes are presented according to the analytical dimensions of the place-keeping concept. The results from the logistic regression, modelling the relationships between place-keeping dimensions and managers' responses about the organisation of their municipalities are presented in Table 3.

Table 3: Results from modelling of relationships between survey questions and explanatory variables.

Analytical dimensions	LR Test	Significant Variables	Levels	Estimate	SE	Significant Odds ratio point estimates (95% Confidence Interval)	AUROC	
Funding	Budget changes Future (Ordinal)	0.0001	Strategy ***	Yes	0.9275	(0.2561)	Yes vs No: 6.40 (2.34 - 17.44)	0.679
	Budget changes Past (Ordinal)	0.0036	Strategy **	Yes	0.6563	(0.2292)	Yes vs No: 3.72 (1.51 - 9.13)	0.635
	Other sources for funding (Binary)	0.0018	Mapping **	None Partly Fully	Ref 0.4486 0.7768	Ref (0.4769) (0.4714)	Partly vs None 5.33 (1.32 - 21.53) Fully vs None 7.41 (1.88 - 29.25)	0.724
Partnerships	Public Involvement Operations (Binary)	<.0001	CI ***	CI 1	Ref	Ref	2 vs 5: 13.50 (1.34 - 135.98) 2 vs 6: 54.00 (4.21 - 692.47) 3 vs 6: 14.00 (2.37 - 82.717) 4 vs 5: 16.50 (1.67 - 163.41) 4 vs 6: 65.00 (5.23 - 833.51)	0.818
				CI 2	1.6564	(0.9225)		
				CI 3	0.3064)		
				CI 4	1.8570	(0.5186)		
				CI 5	-)		
				CI 6	0.9463	(0.9151)		
	-)						
	2.3326	(0.5435)						

						(0.7065)		
	Public Involvement Planning/design (Binary)	0.0087	Mapping GS**	None Partly Fully	Ref 0.10530.8880	Ref (0.4191)	Fully vs None: 6.56 (1.77 - 24.35)	0.706
Maintenance	System to measure quality (Binary)	<.0001	Strategy***	Yes	1.4420	(0.4027)	Yes vs No: 17.89 (3.69 - 86.71)	0.797
	Perception (Ordinal)	0.0192	Strategy*	Yes	0.5846	(0.2556)	Yes vs No 3.22 (1.18 - 8.77)	0.635
Quality	Change of quality Future (Ordinal)	0.0077	Strategy**	Yes	0.5828	(0.2225)	Yes vs No: 3.21 (1.34 - 7.67)	0.623
	Change of quality Past (Ordinal)	0.0007	Strategy**	Yes	0.7617	(0.2326)	Yes vs No: 4.59 (1.84 - 11.42)	0.658

Using logistic ordinal and binary regression with stepwise selection of variables with inclusion level of 0.05 and exclusion level of 0.1. Odds ratios modelled as the probability of yes for binary variables and positive/increasing rankings for ordinal variables. Only significant pairwise comparisons of Odds ratios are shown. LR Test of global null hypothesis (LR Test) and area under ROC curve (AUROC) included to support model validation (the level of > 0.7 is said to indicate a fair predictive capability and values are highlighted in bold). Significance codes: '****' 0.001 '***' 0.01 '**' 0.05. None significant models are denoted ns.

4.1 Local organisation

Local organisation in Norwegian municipalities indicates that units working with green spaces are positioned two organisational steps away from political decision level (40%) in general. Half of the most-central municipalities reported being four or more steps away from political decision level. However, the positioning does not relate to any of the dependent variables: budget changes, having a strategy or engaging in partnerships (Table 3).

Considering the park-management model, most employees work in operations and fewer at a tactical level. Particularly in least-central municipalities (CI 4, 5 and 6), this difference is evident (Table 4). In least-central municipalities, for example, 36% of the managers reported having one person employed on a tactical level, while 64% reported having one employee on an operational level (neither of these employees might work full-time). Municipalities that are more central clearly have more employees at all levels, and yet most people are employed in an operational capacity.

Table 4: Employee numbers on tactical, operational/administrative and operational levels after centrality index and total numbers for all municipalities (in % excluding NA)

Level	All municipalities	Centrality index						
		1	2	3	4	5	6	
Tactical	41.7%	No employees	14.3	15.4	5.7	10	24.1	44
		0-1	42.9	30.8	57.1	73.3	58.6	36
		2-3	14.3	7.7	5.7	3.3	3.4	-
		4-5	-	-	2.9	-	-	-
		6-10	14.3	7.7	5.7	-	3.4	-
		More than 10						
Operations/ Administration	58.3%	No employees	14.3	7.7	2.9	13.3	17.2	24
		0-1	42.9	30.8	42.9	60	69	56
		2-3	42.9	30.8	28.6	23.3	6.9	12
		4-5	-	15.4	11.4	3.3	-	-
		6-10	-	-	5.7	-	3.4	-
		More than 10	28.6	15.4	8.6	-	-	-
Operations	76.3%	No employees	14.3	7.7	2.9	10	6.9	20
		0-1	-	7.7	20	40	62.1	64
		2-3	14.3	15.4	20	20	13.8	12
		4-5	28.6	30.8	17.1	16.7	10.3	-
		6-10	-	7.7	22.9	6.7	3.4	-
		More than 10	42.9	30.8	17.1	6.7	-	-

Every fourth manager reported that green space numbers had increased in the previous three years (43.9%) and will continue to increase in the future (41.8%). A slight majority of managers reported no changes in the past (48.3%) and for the future (46%) and only about 2% reported decreasing numbers. Simultaneously, green space visitation was expected to increase in the next three years, as reported by 58.3% of managers. Only 0.7% reported an anticipated decrease of visitor numbers, while 15.8% expected no change.

4.2 Policies and strategies

Fifty-five per cent of Norwegian managers reported not having a strategy for green spaces (30.9% have a strategy, and 17.7% do not know if they have one or not). The majority of the most-central and middle-central municipalities reported having strategies for green space management, while those with lower centrality were mostly reporting not having a strategy. However, within each centrality level there were at least two municipalities reporting having a strategy (Table 5).

Table 5: Municipal responses to having a strategy after centrality index (in % excluding NAs)

		Centrality index					
		1	2	3	4	5	6
Has your municipality a written strategy for green space?	Yes	71.4	61.5	48.6	23.3	13.8	8.0
	No	14.3	30.8	34.3	46.7	62.1	80.0
	Don't know	14.3	7.7	11.4	30	20.7	12.0

Managers reported that most strategies include aims related to public health (85.1%), followed by inclusive design (65.8), recreation (62.3), biodiversity (50%), and stormwater management (43%). Strategies are, however, significant in managers' views on funding, on the usage of quality measurements in maintenance routines, and in managers' quality perceptions of their own green spaces (Table 3).

4.3 Funding

Half of the Norwegian managers (48.9%) could not quantify their budgets for place-keeping. However, at all centrality levels, a narrow majority could state their budgets – except for least-central municipalities, in which the number of those who could state their budgets equalled the number of those who could not (Table 6). Besides that, almost half of the managers reported that budgets would stay the same in the next three years (48.2%), while 20.1% expected reductions and 32% expected increasing budgets. More central municipalities (CI 1-4) appear to be more optimistic about the future, while 28.6% in most-central municipalities reported an increase in budgets, and only 8% reported increased budgets in least-central municipalities.

Table 6: Municipal responses to budget estimations after centrality index (in % excluding NAs)

		All municipalities	Centrality index					
			1	2	3	4	5	6
Can you estimate the municipality's total budget?	Yes	48.9	57.1	69.2	48.6	50.0	44.8	41.7
	No	32.4	14.3	23.1	25.7	33.3	41.4	41.7
	Don't know	18.0	28.6	7.7	25.7	16.7	13.8	16.7
Budget changes (2018-2020)	Increase	32.0	28.6	38.5	31.4	33.3	6.9	8.0
	No change	48.2	42.9	46.2	34.3	51.7	51.7	64.0
	Reductions	20.1	14.3	7.7	25.7	31.0	31.0	20.0
	Do not know	7.9	14.3	7.7	8.6	6.9	6.9	8.0

Having a strategy was found to be significantly related to perceiving rises in budgets in the future (Table 3). Most municipalities (61.2%), at all levels of centrality, sought other sources of funding, including government support (grants and lottery funds), private

investments and gifts, as well as volunteer work by charity associations and informal groups. Sixty-three per cent of managers reported that acquiring new green spaces or facilities was not followed up with increased budgets. However, most-central and second-most-central municipalities did report an increase in budgets following new facility acquisitions, while middle- and least-central municipalities reported the opposite. Exactly 79% did not estimate costs owing to the neglected state of their green spaces. In general, managers perceived their budgets to be insufficient to maintain the current quality of green spaces (64.8%) at all levels of centrality.

4.4 Evaluations

Overall, Norwegian managers rarely conduct user satisfaction surveys (only 14.4% had done so) or visitor monitoring (only 6.5%). That which is done is primarily carried out in most-central municipalities, however partial monitoring is utilised by all municipalities (80% of the least-central municipalities carry out some kind of monitoring). Mapping of green spaces and their potential is more frequently done; about one in every three managers reported having mapped green spaces and another 19.4% reported having partially mapped spaces (Table 7).

Table 7: Municipal responses to evaluation techniques after centrality index (in % excluding NAs)

Evaluation Tools	Centrality index						
		1	2	3	4	5	6
Visitor monitoring	Yes	28.6	-	8.6	3.3	6.9	4.0
	Partially	28.6	76.9	65.7	70	72.4	80.0
	No	14.3	15.4	14.3	3.3	3.4	8.0
	Don't know	28.6	7.7	11.4	23.3	13.8	8.0
Visitor satisfaction	Yes	42.9	38.5	25.7	-	6.9	4.0
	Partially	14.3	53.8	54.3	60.0	69.0	80.0
	No	14.3	-	5.7	10.0	3.4	4.0
	Don't know	28.6	7.7	11.4	26.7	20.7	8.0
Mapping	Yes	57.1	30.8	37.1	30.0	27.6	24.0
	Partially	-	-	-	-	-	-
	No	14.3	23.1	22.9	26.7	37.9	40.0
	Don't know	-	23.1	11.4	26.7	10.3	24.0

A pattern in the logistic regression analysis indicated that those municipalities reported to have mapped green spaces were estimated to be more likely to engage the public in (re-)planning and (re-)designing processes. Also, the odds of using other sources of

funding were estimated to be higher when managers reported having fully mapped green spaces (Table 3).

4.5 Partnerships

Almost half of the managers (49.7%) reported having engaged their local inhabitants at a tactical management level. The majority of municipalities at all levels of centrality have engaged in some form of tactical involvement. However, this involvement is mainly based on consultation. Initiatives whereby inhabitants take over responsibility were sparse, and only 23.2% of the managers reported having relinquished responsibility. However, projects initiated by inhabitants had a higher response, and about half the managers reported having engaged in such. This was especially striking in the most-central and least-central municipalities. Operational partnerships involved friendship groups, sports organisations, garden associations as well as cultural heritage associations; 42.4% of the respondents in this study engaged with these third-sector partners (Table 8).

Table 8: Municipal responses to engaging in operational partnerships after centrality index (in % excluding NAs)

		Centrality index					
		1	2	3	4	5	6
Do you involve partners in green space operations?	Yes	42.9	69.2	60.0	50.0	27.6	12.0
	No	42.9	23.1	34.3	36.7	58.6	84.0
	Don't know	14.3	7.7	5.7	13.3	10.3	4.0

It is also noteworthy that centrality appears to play a role in the engagement with private partners or organisations (Table 3). Municipalities with a centrality index of 2, 3 and 4 were found to be more likely to engage the public in operational tasks than municipalities with a centrality index of 1, 5 and 6 (Table 8). However, at each level, at least three municipalities engage in such partnerships.

4.6 Management and maintenance

The prevalent maintenance regime (86.2%) makes use of municipally owned units in the form of in-house production. About 6% of managers use their own specialised business units which are also municipally owned. Private services were used by around 7% of managers, who were largely from the most-central municipalities. Most managers

(70.5%) did not expect changes in these arrangements in the next three years; 14.4% expected changes and another 14.4% were unsure.

Three out of four Norwegian municipalities do not use a system to measure quality. Having a system to measure quality, however, is related to having a strategy (Table 3). More central municipalities were more likely to have a system to measure quality, while the least-central municipalities had no such system (Table 9). Those who used quality description methods conformed to a specified standard (Norwegian Standard NS 3420-ZK:2016), and very few other systems were mentioned.

Table 9: Municipal responses to the usage of an overall system to measure quality after centrality index (in % excluding NAs)

		Centrality index					
		1	2	3	4	5	6
Do you use an overall system to measure quality green space?	Yes	71.4	23.1	22.9	6.7	10.3	-
	No	-	69.2	71.4	76.	72.4	96.0
	Don't know	28.6	7.7	5.7	7	13.8	4.0
					13.		
					3		

4.7 Quality as the result of place-keeping

Approximately two thirds (67.6%) of managers perceived their green spaces as being of medium quality, while 26.6% considered their spaces to be good quality and only 5.7% perceive their spaces as not up to standard. Nearly 80% of the managers expected improvements or no change in the quality of spaces over the next three years, with only 12.9% expecting a reduction. The logistic regression analysis suggests that Norwegian managers who reported having a strategy perceive their spaces as being of higher quality than those controlled by managers who do not have a strategy. Managers' perceptions of improved quality in the past and predictions for improved quality in the future may be related to strategic work. Having a strategy appears to make it more likely to envisage higher quality of green spaces in the future (Table 3).

Managers reported that the greatest threat to green space quality was insufficient budgets (87.4%), followed by a lack of awareness of green issues on the part of political leaders (42.5%) and lacking green competencies (33.1%) as the third-most significant threat to keeping green space quality. However, 11.5% of managers' self-reported

threats were closely related to lacking political awareness. The following are two samples of the respondents' comments:

Lack of understanding of administration and political leadership, expertise and equipment.

The connection between public health, quality of living and green structure is difficult to mediate to both administration leaders and politicians.

5. DISCUSSION

In this article, we describe Norwegian municipal green space management, by describing managers' perspectives on place-keeping. Similar overviews have recently been created in the UK (Neal and Community First Partnership, 2016; Neal et al., 2014) and in Sweden (Randrup et al., 2017), and we use these surveys as context for the Norwegian situation.

According to our survey, one in four Norwegian municipal managers expects numbers of green spaces and visitors to increase in the future, especially in the most-central municipalities. Yet, budgets are expected to remain stable in the future, although more central municipalities have a more positive view on increasing budgets than less central municipalities. Insufficient budgets are reported as the greatest single threat to maintaining green space quality. Acquiring new facilities is not usually accompanied by a corresponding increase in budget, and the costs of neglecting the upkeep of space are not known. In combination with the fact that half the managers are unable to estimate their budgets, it is likely that it will become increasingly more difficult to keep quality in green spaces. Managers in Sweden also expect an increase in green space numbers and visitors and stable budgets in the future (Randrup et al., 2017) as opposed to the UK (Neal and Community First Partnership, 2016), where budgets have been cut dramatically during the last decades (Dempsey and Burton, 2012).

Only one in three of the Norwegian managers has a strategy for green spaces. More-central municipalities are however more likely to have such strategies than less-central municipalities and yet in all levels of the centrality index, municipalities report to have a strategy. Managers who report to have a strategy, reflect overall political visions in

their strategies, especially concerning public health. The lower focus on strategic work in Norway is likely to be a consequence of having fewer employees working on tactical levels than on operational and administrative levels. This might also be a result of the many small management units having only limited resources to fund strategic work, as seen for example in Sweden, in relation to municipal trees and inventories (Östberg et al., 2018). In Sweden, one in two managers reported having a strategic plan (Randrup et al., 2017), while about half of the UK managers (48.4%) reported having a strategy. Logistic regression analysis suggests that municipalities who have a strategic plan are more likely to have a system for measuring quality. None of the other explanatory variables explained the use of quality measurements. Moreover, quality is in general rated higher with managers who have a strategy. Having a strategy is significantly related to perceiving rises in budgets in the future. The re-occurring statistical relationship found in this study between different aspects of place-keeping and having a strategy for green spaces suggests that strategic work is a prerequisite for quality place-keeping. Therefore, it appears that the limited focus on strategic work in Norwegian place-keeping processes is significant. This limited focus on tactical work and lack of strategic plans characterises most Norwegian municipalities, as well as those in Sweden (Östberg et al., 2018).

In Norway, operations are mainly carried out by in-house providers; however, most-central municipalities utilise entrepreneurs. Most Swedish managers (68.3%) use primarily their own resources for the upkeep of green spaces. However, about 30% report using a private contractor (Randrup et al., 2017) which is a substantially higher figure than the 7% reported in Norway in the current study. Utilising a system to measure quality is only used by a minority of municipalities, except from most-central municipalities where almost all use a system. This may be explained by the fact that the majority perform maintenance and operations in-house, especially the less central municipalities, and hence consider quality as inherent. The measures mainly used are quality specifications from Norwegian standards.

Evaluations from visitors to green spaces, indicating their preferences and perceptions of quality, rarely take place, and mapping of the green resources is only carried out by one in three managers (more, if partial mapping is included). Despite the method, within all levels of centrality, there are municipalities that perform evaluations and the logistic

regression analysis suggests that those municipalities that do mapping are more likely to use other sources of funding, suggesting that an awareness of the qualities through the results of evaluations of spaces might facilitate the search for such other sources.

However, it is uncertain what the relationship is between specifications of quality and the real and desired performance (Lindholst et al., 2015a), leaving Norwegian managers in a situation where they may be knowledgeable about the technical quality of green spaces, but lack information from users about their preferences and perceptions of quality. Standardised structures may produce inflexible systems that are slow to respond to changes in external circumstances, such as seasonal changes in use and plant growth, changing user requirements, changing surroundings (Dempsey and Burton, 2012) or budget and priority changes (Burton et al., 2014). Nevertheless, having quality measures, standards or other measures ensures a quality vision. Considering the increasing pressures on quality of green spaces, it seems odd not to have any system at all that ensures quality.

Tactical work between the different management levels seems to leave political decision-makers and administrators unaware of the tasks necessary to keep quality green space. Combined with the lack of information from evaluations, incalculable financial challenges and focus on operational work, an obvious insufficiency exists which precludes the creation of overall local strategies based on evidence, tactical and operational expertise, as suggested by Randrup and Persson (2009). Moreover, the limited involvement of inhabitants at a tactical level, which is rather consultation-based than on actual participation, indicates a somewhat hierarchical approach to tactical partnerships (see Arnstein, 1969; Arts et al., 2006). By contrast, all municipalities, irrespective of centrality levels, engage in operational partnerships to a great degree. Second-most-central and middle-central municipalities are more likely to engage in such collaborations. A possible explanation might be that these municipalities still have enough resources to facilitate such partnerships while being small enough as organisations to maintain close relationships with their partners.

Besides this, neither the placing of the green space unit nor the centrality of a municipality seem to influence which municipalities have a strategy, map green spaces, involve third-sector resources in place-keeping processes or seek other sources of

funding. This conclusion then suggests the important role that individual managers play in using available resources to facilitate quality green space, and as facilitators of public involvement. Municipal managers play an important role in facilitating initiatives in green spaces. While involved partners might have objectives that divert them from overall policy goals (MacKenzie et al., 2018) and they may lose interest in participating in the long term (Fors et al., 2015), managers provide a constant within these partnerships (Spijker and Parra, 2018). This is in contrast with findings in Sweden, where only 2.5% of managers involve volunteers in operational tasks (Randrup et al., 2017). In the UK, however, managers' report an increase in partnerships, especially of friendship groups in promoting and encouraging the use of green spaces as well as maintenance of the spaces and organisation of events in green spaces (Neal and Community First Partnership, 2016).

5.1 Limitations

As is generally true of binary and ordinal logistic regression using low numbers of samples, the statistical models in this study have relatively low predictive power as indicated by the overall low AUROC values and large Odds ratio confidence intervals. As such, using the model for prediction is not recommended; the size of estimated odds should also be interpreted with caution, although the established significant relationship between the different variables can be seen with more certainty. This also suggests that the pattern of the variables *having a strategy* and *mapping green spaces* repeatedly showing significant relationships should be given more focus rather than individual effect size relationships within the models.

To characterise and compare Norwegian place-keeping, all municipalities were invited to participate in the survey. Municipalities which were more central (CI 1, 2, and 3) primarily answered the survey. Municipalities which were less central were expected to respond less, owing to the lack of own management units for green spaces, undefined responsibilities for green spaces, and less personnel, which also indicates that urban spaces might not be prioritised, and such municipalities might not consider having urban green spaces. These assumptions were confirmed by respondents:

Reply of a municipality with 7000 inhabitants (in 2017): We are a small municipality with a technical operations unit of about six people... green spaces are maintained as needed ... we have no professional in the department.

We reached out to managers in key positions related to green space management in all municipalities. Requirements were knowledge and potential responsibilities about overall strategy making as well as operational management. However, since municipalities are organised differently depending on size and geographical structure, all managers approached might not have been in a position to answer all questions with equal justification based on their knowledge and experience. Therefore, results and relations established in this paper might have been slightly different by reaching out to other respondents. Also, terms such as *strategy* and *quality measures* may have been interpreted differently by the respondents, just as budgets and estimations of changes in budgets may have been challenging to establish. However, we deliberately asked for estimations rather than exact figures, and thus our results must be seen as qualified estimations and assumptions as a first attempt to assess a nationwide description of green space management in Norway.

6. CONCLUSION

The function performed by Norwegian municipalities of keeping quality green spaces is one which faces many challenges, as discussed. Funding is considered insufficient to keep quality green spaces, yet an increase in tasks is predicted, with more green spaces to manage and more visitors, creating a future dilemma.

Our study suggests that strategic work is decisive in keeping quality green space, although overall local strategies based on evidence, tactical and operational expertise challenge place-keeping. Having fewer employees on tactical levels exposes managers to operational work being carried out without long-term strategic vision. The lack of techniques for evaluating and measuring quality of green space amplifies this challenge. Tactical partnerships between the different management levels seem to be missing. Initiatives coming from local inhabitants appear to receive a positive response. This also points towards the extent of involvement in operations. Green space managers at all levels of centrality seem to attend to user interests by seeking external sources of

funding, such as volunteering work and operational partnerships, emphasising a dependency on the individual manager as opposed to the minor role of the municipal organisation.

The most pronounced difference between urban (most central to middle central) and rural (least central) municipalities is their future expectations. Urban municipalities are more optimistic and expect number of green space and number of visitors to increase and the budget to increase accordingly, even though they consider the budgets to be overall insufficient. Rural municipalities are less optimistic and do not expect increase in budgets following increased facility acquisition. It is also evident that urban municipalities more often have a strategy and measure quality while rural municipalities rarely have a strategy for green space management.

In view of these challenges, green space place-keeping seems to be at risk in Norwegian municipalities, especially less central municipalities, raising the question of whether the current role of green space managers is sufficient to ensure future place-keeping for green resources. The role of strategic work for keeping quality green space suggested in our findings, indicates that strategic management ensures quality green space. However, further research is necessary to explore governance within these partnerships, and the individual engagement of managers and their role within these arrangements. Strategies for green spaces and how these are related to other strategies, for example those concerning public health, might have implications for green space management and should be further researched

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PAPER II

Does Perceived Green Space Quality Matter? Linking Norwegian Adult Perspectives on Perceived Quality to Motivation and Frequency of Visits

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Abstract

Individual perceptions of green space quality are essential when a user considers engaging in activities. This national-scale study provides insights into Norwegians' quality perceptions of municipal green space, visit frequency and motivations for engaging in different activities. We applied regression analysis to investigate how various factors affect the outcome variables, quality perceptions and visit frequency from a sample of the Norwegian adult population. Results reveal that Norwegians perceive their green spaces as having good quality, and higher quality perceptions have a positive influence on green space visits. Half of the respondents visited green spaces out of intrinsic motives in high-quality environments providing fresh air, experiences of nature and quietness. It is essential, however, to take into account that less reported activity mirrors groups of respondents who least often visit green spaces.

Keywords: Perceived green space quality; Norwegian adult perspectives; motivation; activities; visit frequency

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During the past 10–15 years, the demand for high-quality green space in urban areas has increased due to the rise in individualisation, multi-cultural societies, and increased life expectancy [1]. Also, new public values [2] and an increasing acceptance of potentials that green spaces can provide for humans, have been in focus. Urban green spaces provide services such as the improvement of local climate, air quality [3], and carbon sequestration [4], along with supporting services such as biodiversity and habitat provision [5]. Studies have shown that human interactions with nature provide well-being and many desirable health outcomes [6,7], and overall policy visions aim to achieve well-being and quality of life through quality green space [8-10]. These needs are emphasised in agendas such as The New Urban Agenda, which was also endorsed by the United Nations General Assembly in December 2016. The United Nations calls for “promotion of safe, inclusive, accessible, green and quality public spaces... gardens and parks, ...that are designed and managed to ensure human development and build peaceful, inclusive and participatory societies...” [11]. The new agenda on physical health launched in 2018, depicts green space as an integral part of delivering public health and quality of life [12]. Such policy guidance supports the emphasis put on urban green spaces and their role in providing quality of life and well-being for the population.

Moreover, regardless of the potentials that green spaces have, people need to consciously engage with green space to derive most of the benefits [13]. Thus, understanding how and why residents interact with green spaces nearby and how perceived quality influences public use of green space becomes increasingly important for managers and planners of such spaces [13-15].

A complex set of green space properties have been connected to increased green space visits [15]. The prevailing view is that the provision of clean and safe green spaces is particularly crucial for visiting green space [16-20]. Important factors that attract visitors to green spaces are cleanliness, naturalness, aesthetics, safety, access and appropriateness of development. Cleanliness is essential in any setting, although the characteristics of what defines cleanliness vary in the literature [18,21,22]. Other studies have explored specific features of green space deemed vital for attracting visitors [23-25]. Kaczynski and Havitz [25] examined the relationship between features

in a park and residents' physical activity, concluding that significant motivation for being physically active derives from a variety of features reflecting a range of reasons for using green space. Past research has also shown that, given the large diversity of features available, parks with more features are more likely to be used [16,23,26]. Various studies have investigated whether there is an association between people's access to green space and the frequency of their visits. Studies typically use objective measurements such as distance to green space from the visitor's home [27,28] or subjective proximity measures [15,29-31]. Moreover, researchers promote the use of subjective distance measures to predict visit frequency [1,30,31].

However, the relationship between motivation based on proximity and visit frequency may be moderated by quality perceptions of green space [32,33] and socio-personal characteristics [20,34]. Several studies have identified the effects of socio-personal characteristics on visit frequency and preferences for green spaces, including age [30,35], gender, and education [30]. However, these variables may not always have the same effect on visit frequency [36]. Green space is desired not only for its features; visits also depend on how the spaces are structurally patterned and, not least, on individual perceptions [37-39] and other users' behaviour. Perceptions are found to be a stronger predictor for visits than objectively measured quantities of green space [13]. Such perceptions might prohibit or increase visits [40]. These perceptions modify the relationships between what is provided in terms of actual green spaces and what is perceived as quality green space by the public [27].

1.1 (Perceived) quality green space

Public institutions manage green space and define what quality green space is. These organisations are differentiated, functional and operational closed systems in themselves. The production of quality green space is then a performance measured in its own code, and quality lies within the system. These systems sustain themselves, produce quality, create quality evaluations and tools to sustain their quality. So, the question is how the delivered quality is actually perceived as quality green space by the public?

In literature, quality has been defined through varying features that, combined, describe the quality or attractiveness of green space. Van Herzele and Wiedemann [38] illustrate the attractiveness of spaces through attributes that include spaciousness, nature, culture and history, quietness and facilities. Giles-Corti et al. [16] explored perceived quality attributes and activities in green spaces, using a composite index of park attractiveness (describing quality green space), incorporating environmental quality, three amenity factors and two safety factors as indicators. Ries et al. [33] measured perceived park quality through physical environment, social environment, organisational environment, and economic environment, which proved to be positively associated with park use. Bai et al. [41] explored perceived quality through seven quality items, including cleanliness and attractiveness.

Quality can be understood as both characteristics of a feature and as degree of excellence [42]. Characteristics of a feature describe the material it is made of and the condition, the quality of the property itself. On the other hand, the character of excellence is based on perceptions and experiences associated with the feature or the sum of features. Quality is hereby an overall impression of the excellence of the green space, describing green space character. Instead of measuring the quality given by indicators, perceived quality relies on respondents' judgements of quality. Relying on the subjective preferences of the respondent, serving as an indicator of the excellence of green space character more than features of green space [43].

In this article, users' overall quality perceptions of close-to-home green spaces are used to describe their judgement of the excellence of space, to judge the product of quality green space provided by public institutions. These perceptions are then related to motivation for all kinds of activities. Against the general focus on physical activities [for example 44,45] this article considers all kind of activities, relying on the assumption that all outside activities, including visits to green spaces, have positive health effects.

1.2 Motivation for activities

Little research in Norway has focused on the overall quality perceptions of green space and their relationship to proximity, visit frequency and motivation for activities. Nordic perspectives on activities within green space focus mainly on the relation of green space

to health [44,46-49]. In Norway, activities in the outdoors are part of the national identity and culture [49]. However, eight out of ten people live in urban areas [50], while just more than 2 200 km² (1.7%) of a total land area of 323 809 km² is considered urban [51]. This means that natural environments are close to where people live, and 56% have safe access to recreational areas [52]. The very fact of being outdoors and the pure enjoyment of nature are motivations for visiting green spaces [48]. In a literature review, Calogiuri and Chroni [6] conclude that the quality of natural environments, especially safety, aesthetics and accessibility aspects, is essential for increasing physical activity in green spaces.

Hofmann [53] grouped activities carried out in green spaces according to their motivation and categorised experiencing nature as an intrinsic reason for visiting green space. Other motives include activities motivated by others (extrinsic), active motives or social motives [53]. As an explanation of motivational processes underlying the relationship of environment and activity, Ajzen's theory of planned behaviour establishes that behaviour is mainly driven by intention. Motivation can be seen as the intention behind the execution of an activity, which in turn influences behaviour, i.e. the activity that is subsequently carried out [54].

Insights into motivation for users' green space visits can enhance for the choices made in green space management so that the offer of green spaces coincides with user preferences. We assume that activities carried out in green spaces are optional activities. Optional activities take place when conditions for visiting a space are optimal. Such optimal conditions arise when green space features and perceptions of them create a quality green space for the individual and thus a space chosen for the given activity. It is essential, for example, to provide cleanness and safety because otherwise, optional activities would not be carried out. This means that the activities, and their related motives, can be used as an indicator for the quality of green space [55].

In this article, we aim to provide insights into Norwegians' quality perceptions of municipal green space, visit frequency and motivations for engaging in different activities. The research questions of the study were, therefore: (RQ1) Does perceived quality play a role in users' visit frequency to green spaces? and (RQ2) How does the quality of green space relate to users' motivation for activities?

2 MATERIALS AND METHODS

2.1 The Survey

The survey was administered via telephone by an external and independent market research company (Norstat) during January 2018. The sample in the study comprised 1010 Norwegians 18 years of age or older. This sample, which was stratified by age, gender and geography, was drawn from Norstat's permanent panel of respondents that are surveyed every week and are representing the Norwegian population.

2.2 Survey questions

The questionnaire was grouped into five sets of questions; quality of green space, activities, visit frequency, distance to green space, and a set of socio-demographic variables.

The first questions aimed to assess the perceived quality of municipal green spaces in general; how do you perceive the quality of green spaces in your municipality? The five answer options ranged from very bad quality to very good quality, allowing for the overall judgement of the quality of green spaces provided by public institutions.

The second question invited the respondents to focus on a green space they visited most during summer, between April to October. With a focus on the specific green space, respondents were asked to list the activities they performed (Table 1). Table 1 presents the four groups of motivations for activities; (1) extrinsically motivated activities, (2) activities motivated by social interaction, (3) active motivation, and lastly, (4) intrinsically motivated activities.

Table 1: Motivation and activities

<i>MOTIVATION</i>	<i>ACTIVITY CATEGORIES</i>
<i>EXTRINSIC</i>	Walk the dog; Collect food; Play with children
<i>SOCIAL INTERACTION</i>	Visit/ take part in events; Meet friends; Picnic
<i>ACTIVE</i>	Running; Other sports; Cycling; Ball games; Other activities
<i>INTRINSIC</i>	Quietness; Get fresh air; Relax; Get sun; Experience nature

We focused on activities that can be carried out during warmer temperatures, inspired from [30], and kept our focus on three to five activities for each motivation group. Respondents could choose as many activities as they wanted. A fourth category 'do not visit green space' was added to account for non-users. If this option was chosen, the respondents got no further questions about their engagement with green spaces.

Respondents were then asked to state the frequency of visits in the same timeframe. The answer options were daily, several times per week, weekly, monthly and less than monthly [based on 45,56]. In the last questions, respondents were asked to report how far the green space was from their home. Answer options included six distances: less than 50m, 50–149m, 150–299m, 300–999m, 1–5km or more than 5km [based on 31,46,57].

2.3 Statistical Analysis

All data analysis was carried out using R [58]. Firstly, we conducted a descriptive analysis of the sample, using Pearson Chi-square (χ^2) tests, to study the associations between categorical variables, quality perception and visit frequency and predictor variables. Potential predictors included in the analysis were sociodemographic characteristics of the respondents. Age was grouped into six groups (18–29, 30–39, 40–49, 50–59, 60+ years). Educational level was split into two categories: those with ground and secondary education (≤ 12 years) and those with higher education (including university) (> 12 years). Household income was separated into three groups; below average household income (estimated at 600,000 NOK), between 600,000 and 1 million NOK and more than 1 million NOK (approx. 10 NOK = 1 EURO). The presence of children under eighteen years of age in the household was operationalised as a binary variable (None/more). The degree of urbanisation was divided into three categories: urban (Oslo (the capital, 681,067 inhabitants) and cities more than 50,000 inhabitants), suburban (cities with between 5,000 and 50,000 inhabitants) and rural (towns with less than 5,000 inhabitants). Regions in Norway were merged into four regions according to geography, and population size: Northern and Central Norway, Eastern-Norway, Oslo, and Western and Southern Norway.

Secondly, we fitted two linear regression models. We used a stepwise forward variable-selection procedure (R Mass Package) to find the best model to explain visit frequency and quality perception. The results of the Pearson Chi-square test run in the first step determined hereby the predictor variables included. Confidence intervals were calculated using a profile likelihood method [59]. A measure of explained variance for the model was reported as (R2).

Lastly, to investigate the individual activities, which were dichotomous, we fitted logistic regression models for each activity. We used a stepwise backward variable-selection procedure to find the best model explaining the association between perceived quality and the predictor variables. P-values less than 0.05 were considered statistically significant. We evaluated each model using the Akaike’s information criterion, which is suitable for determining the trade-offs between the goodness-of-fit and the complexity of the model. Some predictors reduced the Akaike’s information criterion for some activities, and we report the best fit model.

3 RESULTS

3.1 Population characteristics

The characteristics of the study’s population sample and the variables used in the study are listed in Table 2. The sample was balanced with respect to gender (51% females and 49% males) and age. Most of the respondents had no responsibility for small children (72%), they lived in urban areas (38.7%), and within one-kilometre distance to their most visited green space (59.1%). Almost 70.0% of the respondents perceived the overall quality of their municipality green spaces as good (69.7% female; 68.3% male). In relation to national figures, our sample was well balanced with respect to age, gender, the degree of urbanisation and households with children under 18, although the group with higher education appeared to be somewhat overrepresented [50,60,61].

Table 8: Population characteristics and Pearson chi-square test (χ^2) results for quality and visit frequency and predictor variables derived from a Norwegian study of 1010 adults (significance levels: 0 ‘****’, 0.001 ‘***’, 0.01 ‘**’)

VARIABLE	TOTAL (%)	PERCEIVED QUALITY (χ^2)	VISIT FREQUENCY (χ^2)
N	1010		
GENDER		0.219	0.289
MALE	49.0		

FEMALE	51.0		
AGE		0.598	0.911
18-29	15.9		
30-39	17.9		
40-49	19.7		
50-59	12.9		
60+	33.6		
EDUCATION		0.001 ***	0.002 **
LOWER	39.1		
HIGHER	60.9		
YEARLY HOUSEHOLD INCOME		0.75	0.116
BELOW AVERAGE	31.4		
ABOVE AVERAGE	31.7		
MORE	36.9		
HOUSEHOLD WITH CHILDREN U18		0.564	0.812
NONE	72.0		
ONE OR MORE	28.0		
DEGREE OF URBANISATION		0 ***	0.585
URBAN (> 50,000)	38.7		
SUBURBAN (5,000 – 50,000)	31.2		
RURAL (< 5,000)	30.1		
REGION		0.005 **	0.42
OSLO	12.1		
NORTHERN AND CENTRAL NORWAY	23.4		
EASTERN NORWAY	36.4		
WESTERN- AND SOUTHERN NORWAY	28.1		
DISTANCE	(N=936)	0.004 **	<0.001 ***
< 300M	40.6		
300M – 5KM	50.5		
> 5KM	7.9		
FREQUENCY	(N=936)	<0.001 ***	-
SEVERAL TIMES A WEEK	31.7		
WEEKLY	34.7		
LESS	33.5		
QUALITY	(N=970)	-	<0.001 ***
GOOD	68.1		
AVERAGE	24.9		
BAD	6.9		

3.2 Predictors for visit frequency and quality

In Table 3, we report the relationship of predictors to green space quality and visit frequency. We found that participants living less than 300m from a green space assessed the quality of their nearest green space higher than those who stated that they have between 300m and 5 km to their nearest green space ($p < 0.001$). Participants living in eastern Norway assessed the quality of their nearest green space higher than participants living in Northern and Central Norway ($p = 0.004$). Individuals who visited green spaces less than once a month assessed the quality as being lower, compared to individuals visiting green areas more than once a week ($p < 0.001$). The explained variability of quality assessment was 5.3%.

Table 9: Linear regression model outcomes with stepwise backward inclusion of significant predictor variables for visit frequency and quality perception based on a sample of 1010 adult Norwegians. P-value significance levels: 0 '****', 0.001 '**', 0.01 '*', 0.05 '.' , slopes and 95% confidence Intervals.

VARIABLES	PERCEIVED QUALITY			VISIT FREQUENCY			
	P	SLOPE	97,5% CI	P	SLOPE	97.5% CI	
PERCEIVED QUALITY	GOOD			0 (REF)	0 (REF)	0 (REF)	
	AVERAGE			0.075 .	-0.139	(-0.293-	
	BAD			0.024 *	-0.319	0.014) (-0.596- - 0.414)	
FREQUENCY	SEVERAL TIMES A WEEK	0 (REF)	0 (REF)	0 (REF)			
	WEEKLY	0.311	-0.213	(-0.203 -0.064)			
	LESS	3.37E-05 ***	-0.17	(-0.441 - (-0.159))			
EDUCATION	LOWER			0 (REF)	0 (REF)	0 (REF)	
	HIGHER			0.003 **	0.211	(0.074- 0.349)	
REGION	NORTHERN- AND CENTRAL NORWAY	0 (REF)	0 (REF)	0 (REF)			
	OSLO	0.298	0.101	(-0.09 -0.292)			
	EASTERN NORWAY	0.004 **	0.212	(0.068 -0.357)			
	WESTERN- AND SOUTHERN NORWAY	0.065 .	0.143	(-0.009 -0.295)			
DISTANCE	<300M	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	
	300M - 5 KM	<0.001 ***	-0.213	(-0.330 - (-0.096)	6.36E-13 ***	-0.509	(-0.646 - (- 0.372))
	>5KM	0.112	-0.17	(-0.38 -0.038)	<2E-16 ***	-1.068	(-1.316 - (- 0.82))
R ² (%)	5.3			14.3			

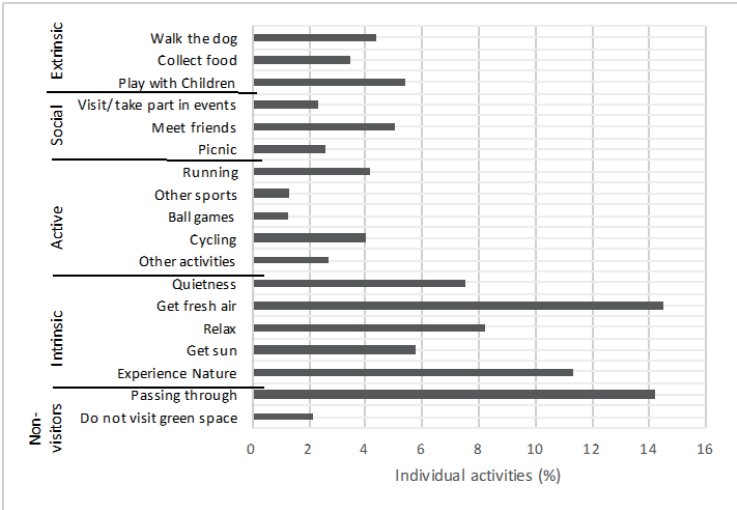
Distance to green space was the strongest predictor for visit frequency ($p < 0.001$) (Table 3), with visit frequency significantly decreasing for distances of more than 300 metres and even more when the green space is more than five kilometres away. High level of education was also significantly associated with visit frequency; respondents with higher education visited green spaces more frequently than those who had a lower education ($p=0.003$). Green space quality was significantly associated with visit frequency; individuals rating their nearest green space as 'bad' visited green space 0.319 times less than those rating their green space as 'good' ($p = 0.024$). The explained variability of visit frequency was 14.3%.

3.3 Predictors for activities

An overview of the reported activities is shown in Figure 1. Among the intrinsically motivated activities, adult Norwegians visit green space mostly to get fresh air (14.5%), experiencing nature (11.3%) or visiting green space to relax (8.2%). Extrinsic

motivation is mentioned by 13.2% of the respondents, visit/ take part in events (2.3%), collect food (3.5%), and play with children (5.4%). Activities motivated by action are mentioned by 13.4% of the respondents. Respondents choosing to pass through green spaces account for 14.2%, while 2.1% do not visit green spaces at all.

Figure 8: Percentage of activities for the different groups of motivating factors based on a study of 1010 adult Norwegians.



Different predictors were associated with different activities; patterns were nonetheless identifiable, and the outcomes of the individual linear regression modelling are presented in Table 4.

Table 4: Linear regression model outcomes with stepwise backward inclusion of significant predictor variables for activities based on a sample of 1010 adult Norwegians. Presented as slope values and P-value significance levels: 0 ****, 0.001 ***, 0.01 **, 0.05 *, .

		INTRINSIC							EXTRINSIC							ACTIVE				NON-VISITORS	
		QUIET ESS	GET FRESH AIR	RELAX	EXPERIENCE NATURE	WALK THE DOG	FOOD COLLECT ON	PLAY WITH CHILDREN	SOCIAL VISIT/TAKE PART IN EVENTS	MEET FRIENDS	PICNIC	RUNNING	CYCLING	BALL GAMES	PASSING	DO NOT VISIT					
PERCEIVE D QUALITY	N	263	509	288	397	153	121	189	81	175	89	145	140	43	497	74					
	GOOD	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)					
	AVERAGE	-0.388*	-0.728***	-0.356	-0.941***	-0.356**	-0.836**	-0.735	-	-	-	0 (REF)	0.069	-	-	0 (REF)					
	BAD	-0.291	-0.796**	-0.796**	-1.05***	-0.083	-	-	-	-	-	0.195	-1.376	-	-	1.632***					
	<300M	-	-	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	-	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)					
	300M - 5KM	-	-	-0.195	-0.21	-0.428	-	-0.447*	-0.702**	-	-	-0.08	0.135	-1.117**	0.28	-					
>5KM	-	-	-1.003**	-0.931**	-0.671	-	0.735	0.026	-	-	-1.849*	-1.448*	0.268	0.39	-						
GENDER	FEMALE	0 (REF)	0 (REF)	0 (REF)	-	0 (REF)	0 (REF)	0 (REF)	-	-	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	-					
	MALE	-0.345*	-0.33***	-0.328*	-	-0.392*	-0.784***	-0.552**	-	-	0.418	0.524**	0.382*	1.538***	0.442**	-					
AGE	18-29	-	0 (REF)	0 (REF)	-	0 (REF)	-	0 (REF)	0 (REF)	0 (REF)	0 (REF)	0 (REF)	-	0 (REF)	-	-					
	30-39	-	-0.181	-0.167	-	-0.088	-	1.442***	-0.772*	-0.79**	0.894	-	-2.135***	-	-						
	40-49	-	-0.427	-0.609*	-	0.275	-	0.503	-1.239**	-1.601***	-0.215	-	-0.907	-	-						
50-59	-	-0.549*	-0.69*	-	0.478	-	0.73	-	-1.247**	-1.742***	-	-1.137**	-	-2.145**	-						
60+	-	-0.103	-0.555*	-	-0.451	-	1.305***	-1.933***	-1.527***	-1.287**	0.919	-	-	-	-						
EDUCATIO N	LOWER	-	0 (REF)	-	0 (REF)	-	0 (REF)	-	-	-	-	0 (REF)	0 (REF)	0 (REF)	0 (REF)	-					
	HIGHER	-	0.256	-	0.22	-	0.697**	-	-	-	0.582*	0.405	-0.698	-0.345*	-						
	NONE	0 (REF)	-	-	-	-	0 (REF)	0 (REF)	-	-	-	-	0 (REF)	0 (REF)	-						
	<18	-0.349*	-	-	-	-	2.294***	0.482	-	-	-	-	1.197**	-0.44**	-						
DEGREE OF URBANISA TION	RURAL	0 (REF)	-	0 (REF)	0 (REF)	-	0 (REF)	-	-	-	-	0 (REF)	-	0 (REF)	0 (REF)	-					
	SUBURBA	-0.526**	-	-0.179	-0.565**	-	-0.663**	-	-	-	0.636*	-	-	0.449*	-1.087**						
	URBAN	0.124	-	0.514**	-0.597***	-	-1.1***	-	-	-	0.777**	-	-	0.926***	-1.394**						

Quality is a strong predictor for intrinsically motivated activities (see Table 4). Positive quality perceptions increase visit frequency. Besides, getting fresh air, experiencing nature and visiting green spaces for relaxation are more likely to be motivations of female respondents. The degree of urbanisation was significant for relaxation, where inhabitants living in urban areas were more likely to visit green spaces for relaxation. However, experiencing nature as a motivation for visiting green spaces was less likely for urban inhabitants.

Extrinsically motivated activities are significantly related to gender (see Table 4). Female respondents are more likely to visit green spaces for activities, such as playing with children, collecting food and walking the dog. Distance plays a crucial role for walking the dog and activities with children, while a greater distance to green spaces reduces visit frequency for extrinsic motivations.

Significant predictors for active-motivated activities are gender, distance and education (see Table 4). Males are more likely to engage in active activities, running, cycling and engaging in ball games. Distance to green spaces decreases all types of active motivated activities. Higher education corresponds with increased visits for running and cycling activities; however, ball game activities decrease with higher education.

Socially motivated activities are significantly related to age (see Table 4). Commonly, engaging in social activities decreases with increasing age. And yet, a pattern for picnicking emerges, age groups of 30-39 are more likely to visit a green space for a picnic than the age groups 18-29.

A commonly shared trait of respondents who do not visit green space is their quality perception (see Table 4). Spaces considered of average or poor quality are visited less frequently. Also, there are significantly fewer non-visitors in urban and suburban areas than in rural areas.

4 DISCUSSION

To the best of the author's knowledge, the present study was the first to investigate the relationship between perceived measures of quality, visit frequency, and motivation for activities in Norway. Perceived measures, even if they are not in correspondence with

objective measures, are essential since perceptions are the basis for individual decisions. We asked respondents specifically about the green space they visit most frequently. We have assumed that these green spaces are close to their homes, irrespective of the type of green space. Such spaces are used more frequently and are visited most of the time because of their proximity, rather than the individual's attraction to or fascination with the green space. Thus respondents may have an immediate relationship with a green space close to their home [41].

In our study, respondents give a judgement on how they perceive the overall quality of their most visited green space provided for them by public institutions. By doing this, green space can be judged related to an overall impression instead of valuing features of space, as quality or attractiveness indicators tend to do. This judgement might be seen as superficial; however, preferences and socio-personal characteristics are considered, giving respondents the opportunity to evaluate the organisation that produces green space quality.

(RQ1) Does perceived quality play a role in users' visit frequency to green spaces?

The results demonstrated that visit frequency is related to age, level of education, distance to and quality perceptions of green space.

The strongest predictor of whether Norwegians will visit green space is self-reported distance. When their homes are more than 300 meters away from a green space, the number of visits decreases. Earlier studies confirm this finding. Flowers et al. [32] investigated the relationship of subjective predictors of visit frequency within a UK nation-wide survey, showing that 67.7% of participants visit green space close to their homes at least a few times a month. Proximate parks encouraged park use in Perth, Australia [16], and access was identified as a defining factor for park visits in five Southeast European cities [36].

Having a higher education indicates increased visits to green spaces in our study; this tendency, however, is contrary to findings of a study in Denmark, where education had no relation to the frequency of use [30].

We found that positive quality perceptions were related to an increased number of visits. Quality green space thus provides optimal conditions that allow for activities to happen. Other literature refers to essential green space properties that provide such conditions. McCormack et al. [18] found that quality measures such as lack of maintenance influenced park use, especially dirty un-kept areas, the presence of litter and overfull rubbish bins were mentioned. Similar, Ostoić et al. [36] found that the lack of waste bins, signs of vandalism and litter were important issues preventing green spaces visits. Appropriate maintenance is perceived as highly significant and poor maintenance evokes negative perceptions of green space [36,45].

(RQ2) Does quality relate to users' motivation for activities?

Almost half of the sample of Norwegians are motivated by intrinsic reasons to visit green spaces. Norwegians have a close connection to nature, and the pure enjoyment of being outside and experiencing nature is an important motive. In a historical perspective, Norwegian recreation was often associated with quietness and solitude [62]. Similar, Calogiuri and Elliott [44] found experiencing nature to be the second most important motive for engaging in activities. Calogiuri et al. [47] found that fresh air is frequently reported by Norwegians when asked to describe nature experiences. Also, Hervik and Skille [48] found that fresh air was found to be mentally cleansing in their interview study of middle-aged and elderly laymen living in rural towns in Norway. Intrinsically motivated activities are strongly associated with positive quality perceptions. Motives for visits such as getting fresh air, experiencing nature and quietness indicate preferences for quality green spaces of a natural character. Natural environments are diverse, besides providing fresh air, green spaces preserve habitat and enhance biodiversity, indicating the relationship of activities carried out, and the services green spaces provide. The relation between intrinsic motivation and quality green spaces suggests that visits are primarily carried out in a space of high quality, where quality relates to nature, with vegetation and trees that absorb pollutants, reduce noise and thus provide fresh air. Besides positive quality perceptions, female respondents were more driven by intrinsic motivated activities than men (except for the motivation of experiencing nature, where we did not find any gender-related differences). This is confirmed in the research of Calogiuri and Elliott [44], where females were found to rate the importance of motives generally higher than males. This might indicate that women

appreciate aesthetic and well-being values more highly than men do [63]. Getting fresh air and experiencing nature are both activities significantly associated with higher education, which was similar to relations found by Ostoić et al. [36], who found that the more highly assessed importance of urban forests was related to higher education.

We found several differences between Norwegian women and men in engaging in activities. Norwegian women were more motivated by extrinsic activities than men. Women were also significantly more likely to walk the dog, collect food items and play with their children. Our results showed that walking the dog and playing with children was strongly associated with distance to green space. Similar, Gundersen [62] reported that Norwegian children's use of green areas was strongly associated with increasing distance to nature, as a 100-metre distance from green places to their homes meant decreased use. On the contrary, collecting food is related to higher perceived quality of the green space. Green spaces have a certain quality that provides optimal conditions, for example, for picking mushrooms and berries.

Norwegian men are more active than females. Male respondents are more likely to engage in running, cycling and ball games. These activities decrease with greater distance to green space (over 5km). Running and cycling were also significantly associated with quality perceptions of green space. Also, education relates to increased visits for running and cycling activities, which is also reported by Schipperijn et al. [56], where higher education was found to be significantly associated with outdoor physical activity in the nearest green space. However, bad quality perceptions as opposed to good quality perceptions did not influence running, which might indicate that active Norwegians run despite the conditions. Engaging in ball games was also not influenced by quality perceptions.

Norwegians' social motivation –taking part in events, meeting friends and visiting green spaces for picnics – is strongly associated with age. Increasing age decreases visits for socially motivated activities. None of the socially motivated activities was related to quality perception, and except to take part in events, none were related to distance to green space either. This indicates that a greater attraction for events exists than for the actual character of the space. Visiting events might relate to the emergence of new concepts such as urban farming, agricultural initiatives [64] or outdoor sports

arrangements and exhibitions, creating social arenas which may attract young people to urban forests and green spaces [62]. Such events might be visited more often if such events took place in a space close to our homes.

Norwegians use green spaces as a transitional passage from one place to get to somewhere else. Even though passing is not an activity, passing a green space indicates that people walk through green space as a deliberate alternative to street environments. The largest number of people walking is found in distances of less than 1 km, and the use of cars to drive to visit green spaces is higher for longer distances. This also means that an essential criterion for walking is found within the city structure where people live and work [65]. Passing through a green space is significantly related to urban and suburban areas, which is logically related to shorter distances to points of need (schools, kindergartens, shops). Norwegian governmental planning guidelines in 2014 emphasised that the increase in urban transport should be absorbed by public transport, cycling and walking [KMD, 66]. Our results point to the potential creation of such better networks of green spaces that people utilise in urban areas. Only a small percentage of Norwegians do not visit green space, and non-visitors primarily perceive green spaces as having bad quality.

5 STRENGTHS AND LIMITATIONS

To the best of the author's knowledge, the present study was the first to investigate the relationship between perceived measures of quality and visit frequency, and motivation for activities in Norway in a large national sample.

The interviewers of the research company followed a strict order of questions and answer options. We assumed that there might be a bias on the part of the respondents to first-mentioned activities and launched a control survey with randomly ordered answer categories for activities to control for this bias. The control survey was administered online via Questback and then announced on the university Facebook page, showing similar results for activities as our original survey.

Our definition of green spaces was quite open and could be interpreted in different ways. In general, there is no universally accepted definition of green space, and Norwegian municipalities define spaces differently. This might have led to an over- or

under-estimation of green space visits. This also limits the understanding of activities in specific green spaces. Also, respondents were only given a choice of 18 activities, whereas other activities may also be important for encouraging green space visits, especially winter activities, and these have not been considered.

Besides, the time of the year when the survey was conducted (October 2017 to December 2017) was not optimal, since respondents had to remember how they perceived green space quality during the summer months (April to October). Other research spent summer months to do their research on outdoor activities [15]; this was not possible for our survey.

We used a set of predictor variables to identify patterns within the Norwegian population sample to study how quality was related to different activities. Ideally, more variables should be included to better understand these associations, such as the participants' ethnicity, profession, and level of physical activity. This is a cross-sectional study and causality cannot be inferred from the observed relationships. We do not think selection bias is a problem in our study. The study also focused on associations, where we compared groups to a greater extent than we estimated prevalence.

6 CONCLUSION

Understanding how and why residents interact with green space becomes increasingly important for the management and planning of nearby green spaces so that green spaces can fulfil their role in preserving and enhancing residents' quality of life. The present study fulfilled two goals. Firstly, it discovered the role of Norwegians' overall quality perceptions of and visit frequency to green spaces provided by public institutions. Secondly, it revealed the relation between activities carried out and visitors' characteristics, quality, visit frequency and distance on a national scale.

Overall quality perceptions can indicate preferences of users for green spaces provided by public institutions. By using this information, green space quality provided can be judged and managed as well as planning priorities might be set.

Norwegians perceive their green spaces as having good quality, and higher quality perceptions influence green space visits positively. The strongest predictor for visits is

perceived distance; spaces close to home are visited more frequently than faraway spaces. At the same time, those perceiving their neighbourhood green space quality as bad visit them less frequently than those perceiving their green spaces as good. Many Norwegians pass through green space, especially in urban and suburban areas. This indicates that a better network of spaces exists in more urbanised areas and that Norwegians consciously choose alternative routes in order to pass through green spaces.

Half of the Norwegians visited green spaces out of intrinsic motives. Intrinsically motivated activities are carried out in high-quality environments, indicating a conscious decision to engage in an activity in a nature-like environment of high quality. An increase in green space visits contributes to inhabitants' quality of life. Therefore, it seems advisable to provide quality green space that facilitates intrinsically motivated activities, meaning nature-like environments that provide a space for quietness and contemplation, breathing fresh air and the possibility to experience nature's varieties. To facilitate for intrinsic reasons for visiting green space in strategic and operational goals for management and planning might enhance visitation. Moreover, from a public health perspective, green spaces and their services are vital to increasing health and well-being. Visiting spaces to get fresh air, to experience nature, to run and cycle is related to higher education. Educational campaigns might be used to increase awareness of the benefits of green spaces and thus positively affect human behaviour.

However, from a planning perspective, it is essential to consider that less-reported activity mirrors groups of respondents who visit green spaces the least. Green space features permit different activities for different groups, and spaces close to home with play equipment are vital for Norwegians with children. In our study, perceived overall quality did not predict the frequency of playing with children and walking the dog. One explanation is that playing with children and walking the dog are carried out despite the nature of green space. On the other hand, quality spaces close to home provide opportunities to run and cycle. The nature of such spaces most likely includes appropriately maintained paths, connectivity within a space and towards other spaces, appropriate lighting and other facilities necessary to carry out these activities. Equally important is the fact that events that are close to home increase visits; with this in mind, local initiatives that engage inhabitants and invite them to visit green spaces might

increase visits. Subsequently, it is vital to keep and increase the establishment of green spaces close to where people live to engage everyone in an active lifestyle.

This in mind, specific tools and measure, as described in the literature, seem necessary to indicate quality of features and to keep quality within the individual green spaces. As indicated by our results and based on the different green space quality perceptions, it seems plausible to use measures for quality that include users' preferences, such as the Nordic Green Space Award [2] or similar measures where the overall character of a green space is judged, but also qualitative statements and revisions of the management are made.

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PAPER III

The creation of place through local engagement: uniting multiple perceptions of quality green space

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Abstract

The value placed on properties depends on interests as well as experiences and expertise of the individuals concerned. Quality ‘models’ applied to publicly owned green spaces are driven by managers who formally define quality according to technical and maintenance-oriented standards. Such standards are not always aligned with users’ needs. Norwegian municipalities have a tradition of supporting user engagement initiatives. Thus, green space managers rely to a large degree on the responsibility and motivation of individuals. This paper draws attention to the complex set of quality perceptions within the arrangement of green space management, user initiatives and (green) place.

By the use of Øya as a single case study, we interviewed formal organisations and individual actors. We applied the Policy Arrangement Approach as an overall analytical framework, and ideology differentiation where we distinguished between ontological discourses, normative statements and strategic discourses. We propose that from a management perspective, in the creation of a place five stories should be considered; (i) identify the bonds to place for activating the local engagement; (ii) allow for the unforeseen – maybe even take a risk; (iii) find synergies between stakeholders, (iv) think in long-terms, and (v) as a management organisation – be actively engaged too.

Keywords: Green space management arrangements; Case study; Quality green space; Three layers of discourse

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Global trends such as urbanisation and climate change are widely addressed by the use of nature (European Commission (EC), 2015; Kabisch et al., 2017). The need for ‘quality’ in green spaces is one of the aspects that have come to the fore. Quality green space is mentioned explicitly and implicitly in national guidelines and policies (KMD, 2016; WHO, 2018), which recognise the positive association of quality green spaces with an array of health benefits, including mental and improved physical health and social cohesion (Astell-Burt et al., 2013; Kothencz et al., 2017; Tsai et al., 2020). Similarly, several international reviews report on the relationship between health and green space (WHO, 2017) as an example of cultural ecosystem services. Furthermore, green spaces provide numerous other ecosystem services known as supporting, regulating or provisioning services (MEA, 2005). Policies are establishing norms for quality green spaces, but setting them up and managing them takes place on a tactical level. Especially in a country, such as Norway, where senior executives enjoy a high degree of autonomy (COCOPS, 2013). The actual handling of ecosystem services most likely differs according to the individuals dealing with green spaces.

Quality is something desirable. The notion of quality originally described the properties of an object. Over time, quality has shifted towards denoting a publicly valued, organised and omnipresent activity (Dahler-Larsen, 2008; Lindholst, 2017). It is moreover a contested concept, with an abundance of conflicting interpretations and multiple layers of meaning, relying on a positive connotation. In practice, the definitions and standards defining quality green spaces are debatable, as the values and views of individuals are innate to quality descriptions and might exclude other values. Within public green space management, organised user groups, unorganised user groups as well as management staff and operational personnel within public organisations, all may have conflicting interests and their preferences exemplify the contested nature of quality (Dempsey et al., 2014). Public green spaces are traditionally in the hands of local authorities, and from a long-term perspective, the responsibility lies with the green space managers (Dempsey et al., 2014). Hence, the evaluation of properties within a green space depends on those involved in green space planning and management. The value placed on properties depends on the interests as well as the experiences and expertise of the individuals concerned. Thus, the quality ‘models’ applied by managers of green space

are not free of judgement, as managers often define quality according to technical and maintenance-oriented standards, which may be denoted as a technical understanding of quality. Such standards shape the understanding of quality as an instrument for maintaining tasks (Lindholst et al., 2015b). It is evident that a technical and standardised definition of quality is not always aligned with users' preferences for everyday visits to green spaces (Fongar et al., 2019a).

Outdoor activities are part of the Norwegian national identity and green spaces, such as forests close to cities, are valuable resources. Even though Norwegian managers seem to have the financial resources to keep quality green spaces, the greatest threat to keeping them according to these managers' perception of quality is insufficient financial resources (Fongar et al., 2019b). In addition, only half of the Norwegian managers have a strategic plan for the management of green spaces (Fongar et al., 2019b). The lack of strategic work and a reliance on volunteers for the upkeep of green spaces complicates the management arrangement in Norwegian municipalities (Fongar et al., 2019a). Almost half of Norwegian managers, regardless of the size and geographical location of the municipality, report that projects are initiated by inhabitants and that municipal managers relinquish their responsibility for these projects (Fongar et al., 2019b).

Norwegian municipalities support user engagement initiatives, and green space managers rely to a large degree on the responsibility and motivation of individuals, for example when engaging in the upkeep of neglected spaces. Such grassroots initiatives thrive on the enthusiasm of people. Within such engagement initiatives, individuals or organisations are key actors in initiating change because they are concerned about the green space and thus motivated to becoming active (Spijker and Parra, 2018). Municipalities, as the owners of the land, are crucial in providing knowledge, financial support and expertise, and are mediators at the political level (Buijs et al., 2019). The active engagement of citizens has been shown to be beneficial for public health, biodiversity and social cohesion (Fors, 2018; Mattijssen et al., 2017), and a strong consensus on the positive power of volunteering is found in the Norwegian population (Frivillighet Norge, 2019). The strong bonds to nature are rooted in the belief of a national identity of being close to nature, away from the big cities, and strong, nationally organised societies are reasons for the popularity of volunteering (Tranvik and Selle, 2005).

Management is inherently dealing with conflicting demands, ideas, and varying wishes from society about the green spaces entrusted to it (Carmona et al., 2008; Dempsey and Burton, 2012). The engagement of users have caused conventional green space management practices to evolve as managers' role changes from providing ecological expertise to providing socioecological expertise (Randrup and Jansson, 2020). Therefore, green space management needs to be considered and understood in the light of its governance relations. While green space governance is often discussed in the literature (Buijs et al., 2019; Fors, 2018), the origins of the concept of place and the motives of the initiatives are often under-examined. The stories of those involved in these governance arrangements are intrinsically tied to the creation of a place (contrasted to the notion of a space), as stories are the motivation for the individual to be active.

This case study of Norway shows that the country has a long tradition of citizen engagement as an integrated part of green space management arrangements. However, do managers, operational personnel, organised and unorganised users have the same perceptions of quality? This paper draws attention to the complex set of quality perceptions within the arrangement of green space management, user initiatives and (green) place. The aim of this paper is twofold: to describe the creation of a place and to explore multiple perceptions of the quality of public green places.

1.1 Norway and volunteering

Norwegian local governments and civil society, particularly voluntary organisations, are a central part of Norwegian infrastructure. Voluntary organisations, rooted in local environments, provide content and form to the Norwegian democracy. This relation is based on two premises. First, Norway is unique, with its elongated land shape breached by mountains and fjords, along which human dwellings are sparsely scattered. Eighty per cent of Norwegian citizens live in urban areas (Statistics Norway, 2018b), but only about 2 200 km² (1.7%) of Norway's total land area of 323 809 km² is considered urban (Statistics Norway, 2018a). Considering the country's history of 500 years of foreign rule, the secluded outlying regions are regarded as truly Norwegian, whereas the city centres were seen as tainted by the ruling peoples (Tranvik and Selle, 2005). Secondly, the local level of national organisations, rooted in this rural and thus true Norwegian

base, is most important for the definition of a Norwegian identity, because local activities and opinions were found here. The rural areas are part of nation-building, and a nationally organised society is believed to ensure a national unity (Tranvik and Selle, 2005).

2 THEORETICAL FOUNDATION: SPACE AS A PLACE

A place is rooted in the lived experiences of the individuals that create and keep the place. Space, on the other hand, lacks this meaning (Cresswell, 2014). However, the notion of social space (Lefebvre and Nicholson-Smith, 1991) blurs this distinction. Place is embedded in processes which makes places inherently entangled with time. The relational notion requires an understanding of both space and time, presenting a relational conception of space. Space is contained in objects and they exist only when these objects relate to other objects. This implies that an object or event in space cannot be understood only by that object or event, as it relies upon everything else going on around it (Harvey, 2004). Relational space invites a swirl of spatial trajectories, networks and flows in which space itself is disbursed and distributed as an effect of social processes, so that boundaries become blurred (Malpas, 2012).

Reflecting on the ontological basis of the concepts space, place and time, Malpas (2012) provides an understanding of place by referring to Greek thought. The idea of a space is presented through the concept of openness, and yet openness can only appear in relation to boundaries. Within this openness, things, people and materials are moving in and out of space. This emergence is presented as the idea of time. Place is then where openness, emergence and boundedness are held together. It is essentially where the stories of the individuals concerned meet. The stories that are told, relating to experiences, reveals the individuals' meaning of quality in a specific place.

The concept of quality in a green space, based on a governance arrangement, is the focus of this paper. Place is essentially created by the stories told, relating to time, the experiences and relations of the narrators, and the actual space. The individual stories then reveal the overall meaning of quality in place.

3 CONCEPTUAL FRAMEWORK AND INTERVIEW METHOD

We applied the Policy Arrangement Approach (Arts and Leroy, 2006) to gain a deeper understanding of a local governance arrangement. This approach has been widely employed to study governance structures related to green space management, e.g. urban forestry by Ordóñez et al. (2019) and urban storm water management by Qiao et al. (2018). The Policy Arrangement Approach distinguishes four analytical dimensions concerning actors, rules, resources and discourses. The focus is on the stories told about the place by the individual actors involved in the arrangement, and these stories form discourses. The discourses form the base of information for identifying the actors involved, the rules related to informal and formal procedures, and the resources employed, including the skills, materials, time and financial resources that were brought into the process by the actors.

Table 1: The four dimensions and descriptions of the Policy Arrangement Approach applied

To analyse discourses, we applied Wiering and Immink's translation (2006) of Therborn's ideology study (1999). Based on Therborn's differentiation, Wiering and Immink (2006) distinguish three layers of discourse: (1) those that define reality and reveal the truths of actors (ontological discourse); (2) those that describe situations that are desirable (normative statements); and (3) those that lead to desirable outcomes (strategic discourse). Our focus on the quality of place within the green space management arrangement constrains these dimensions based on the contested nature of quality. The focus is on stories and meanings about the place, where the quality of a green place is inherent in each of the stories told by the individuals about the place. To unite perspectives on quality green places, we focus on three layers: (1) the ontology of stories about what a quality green place is; (2) the aspects forming the actors' preferences; and (3) the elements informing how quality green place can be achieved.

3.1 Case selection and Data creation

Volunteering imbues the individual with positive energy. Rooted in Norwegian society and relied upon to a large degree by managers, volunteering is relatively common in Norwegian green space management arrangements. The initiatives that originate from

citizen motives thrive on their enthusiasm and are rooted in their meanings and stories and the relinquishing of the municipality's responsibility. And yet, the individual manager is key to facilitating volunteering initiatives and acts within a strategic management approach to ensure quality in green places (Fongar et al., 2019b). We opted for a single case study approach (Stake, 2005), and designed the study to apply both the Policy Arrangement Approach and Therborn's differentiation of discourses. Thus, we optimised the understanding of the case so that we would be able to generalise beyond it (Flyvbjerg, 2006).

The subject of the case study is Øya (meaning 'island'), which is situated in a rural part of Norway, just outside the town centre of Vikersund in Modum, a medium-sized municipality (around 14 000 inhabitants) in Viken county, Norway. Figure 1 locates Øya and Modum municipality in Norway. The town centre is surrounded by forest and lies next to Norway's fifth biggest lake, called Tyrifjorden. The history of Øya is rooted in those involved in the space. In the 1850s, the owner of the farm that is now largely the present town centre built a mill on the island, Øya. To provide extra energy and optimise the use of the mill, a canal was built, which created a small waterfall at the southern end and separated the former peninsula from the mainland. In 1866, a railway track was built to connect the town to the next bigger town. During the construction, the farm owner managed to get tracks laid to his mill. The railway construction to some extent preserved the island and the area alongside the tracks. However, the mill burned down in 1899 and the land was sold to the timber inspector. Subsequently, the area was used for grazing, regulation of timber transportation on the lake and not least for recreational purposes. Then, as today, the island was recognised as a valuable habitat for a variety of fauna, ranging from fish to birds. Even elk have occasionally been spotted there. As industry in the area began to grow, the lake was redeveloped in 1909 and a less steep waterfall created.

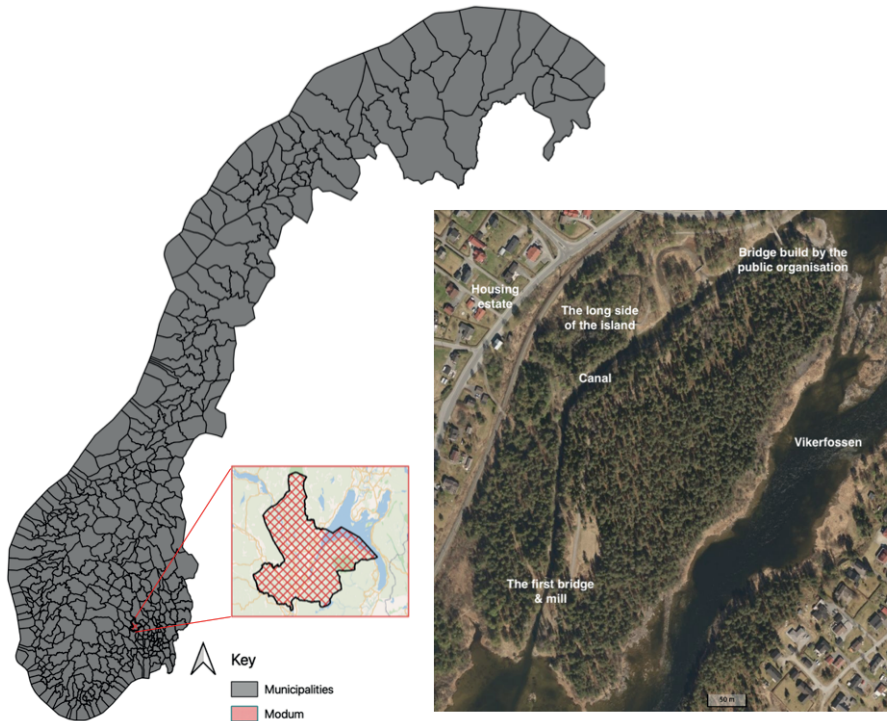


Figure 1: The case area Øya in Modum municipality, county Viken (picture source: Norgeskart.no; Map created in QGIS 3.12))

In this study, the individual stories told by the actors provide the information for deriving the discourses and the rules related to and employed within the place. We involved the individuals in a conversation about Øya in the green place itself. Thus, the interviews were conducted more as an informal conversation, rather than as a formal interview, whilst walking through Øya, following the direction of the interviewees. Walking interviews have proven a fruitful way of accessing locals' connections to their surrounding environment (Evans and Jones, 2011).

An interview guide was developed as open ended and structured according to the Policy Arrangement Approach, with the purpose to elicit a continuous conversation with a focus on the individuals' affiliation and relationship to Øya. The stories supply a wealth of details and reveal the individuals' motivations for being active in relation to Øya. After

an initial meeting with the green space manager, the first author spent one week at the end of August 2018 in Øya, meeting random citizens who used Øya in the early and late hours on various weekdays and weekends. Walking interviews with the green space manager, the deputy of operations, and three members of three volunteering organisations were carried out. To reach users, the presence of the first author was mentioned on the Facebook page of the municipality and a flyer was hung up at the entrance to Øya. User were approached within the green space, asking them if they would like to talk about Øya. Two interviews were scheduled on the following days. In total, seven individuals were interviewed in a longer walk through Øya and their relations to the place are exemplified in Figure 2. In addition, the first author participated in meetings and inspections with the manager during one working day to get to know the people in the public organisation and people involved in green space operations.

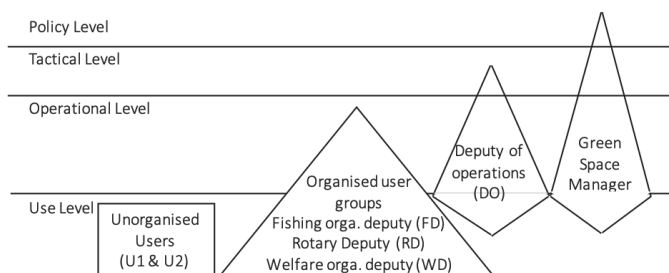


Figure 2: The actors involved positioned according to green space management levels described by Randrup and Persson (2009) and unorganised user level. The thickness of the triangle indicates the level of involvement

3.2 Data analysis

Our data is based on a qualitative, interpretative analysis of the stories told by the respondents. The transcribed stories were analysed to unite quality green place perspectives according to the dimensions of actors, resources, rules and discourses. The stories were further analysed deductively, based on the three layers of discourse (ontology, normative expression and strategies) to inform the discourses on a quality green place.

We identified five stories synthesised from the interviews of the actors, the organised user groups, the unorganised users, the deputy of operations and the green space manager. An extract of all five stories is presented in Table 2, and finally the three layers of discourse are presented in Table 3.

Table 2: Five stories being part of creating a place: Summarised stories according to actors, rules and regulations and resources

Stories	Actors involved	Rules and regulations	Recourses
The bonds to the place	Three organised user groups	Public space kept to itself Land right for the surrounding farms: Grazing area for cows and horses	Residents change aspects as they please Residents own abilities
	Unorganised users		
Allow for the unforeseen	Public organisation (Manager)	Bird conservation area by royal degree	Municipal funding (Tendering process for the building of the bridge and path)
	Two organised user groups	Public space kept to itself Ensuring access with no political interventions	Local knowledge Voluntary work
Finding synergies	Public organisation (Manager)	The design of the long side was decided by Rotary and the Fishing organisation	Fund applications private actors and utilising private actors for funding
	Two organised user groups	Agreement about "Bigger changes" to be discussed with the municipality	Voluntary work
		General agreement on the protection of births and nature	Lottery funds (public actors) and some money that could be used
Long term collaborations	Public organisation (Deputy of operations & manager)	Make decisions themselves if everything is working (public actors)	Upkeep public actors (grass cutting, emptying of the trash, safety issues)
	Two organized user groups	Upkeep of the long side is decided upon by private actors	Voluntary work: Rotary members have the equipment for upkeep
The formal management organisation is part of the solution	Public organisation Deputy of operations & manager	The unit is part of the technical department	Overview over the resources within the municipality and within the organisation
		Collaboration with an organisation employing people with disabilities	
		All green spaces (including graveyards) are managed within the park unit	Participate in planning to specify the practical side

4.1. The bonds to the place

The first story (Table 2) we encountered is related to the history of the place and to place attachment. We found that the individuals bonds to Øya's were decisive for making it a place. The grandfather of the fishing organisation deputy (FC), an artist, used the area for over 30 years as inspiration for his drawings. With an eye for detail, he observed birds in their natural forest habitat. His grandson, FC, accounted for 43 different types of bird species in the drawings. FC found some notes written by his grandfather's apprentice that referred to his father and the building of the canal.

Around the 1930s, the waterfall was developed a second time, with massive excavations to deepen the channel of the fall. A kind of pier was built to prevent timber from floating to the island. The waterfall was developed again in the 1950s, when the last modern boat started towing timber from the forest areas in the north down the lake to the factories in the south. The area to the west of the island was developed as well, and a housing estate built. For the residents, the island became their closest green space. WD, RD, FD and U1 grew up here. FC remembered that in his childhood there were always summer parties at this place. Cows and horses grazing on the inside of the island kept the grass short and prevented the place from becoming overgrown. FC's father used the area for athletics and spear-throwing: "he was bragging that he was only half a metre away from being Norwegian champion". Hence, the space became a place to go to, to have coffee, for Sunday walks or for housewives to wash clothes. "Down by the lake they had some kind of pot so they could boil the white wash ... we small children had to be with them and we always had food with us," WD explained. There was a small open space with some patches of grass where the children played football. To improve that spot, residents cleaned the area, someone cut down some trees and the field was widened a few times. There was a great interest in sport; WD played soccer there, recalling three teams with seven players each playing tournaments: "We always had hard fights, we have been fighting more than playing soccer. This was all summer long, playing soccer and bathing ... I had a lot of fun here." The canal also provided a place for bathing, where those growing in the area learnt to swim. WD remembered, "you had to swim about three metres to get to the other side, that is how you learn swimming fast." RD continued, "it was deep enough in the middle so that you could start swimming, two to three strokes and you were on the other side." The grandmother of U1 also learnt how to swim there. RD remembered tribal wars between those on one side of the lake and

the other: “we would fight and when we were at school and in our free time there was never any problems just in the afternoons to avoid homework.”

4.1 Allow for the unforeseen

Secondly, we found that trust and allowing things to happen when the occasion occurs is another story to be told when making a place. The councillor in charge before the manager started was excited about buying spaces of interest for the municipality and he bought the island in the 1970s, but the island was inaccessible and remained pristine. FC, following the tradition of his father, remembered that it was said, “this island should not be touched”, meaning that its public use should not be facilitated. The opportunity for developing the island coincided with the third development of the waterfall in the 1980s. Vast amounts of soil were moved and the then manager took that opportunity to move the soil to the outside of the road passing the island, creating an entrance to it. At that time, the manager had just started in the position as green space manager; yet the idea was formed and executed with no resistance from the politicians, who said: “just make it your way and we’ll fix it”. The manager explained, “I believe that is how it is in our municipality, one is happy for what is done, and it is important, I think, to find a balance. Don’t make something too expansive, you need to find out what is an acceptable level for what you are doing.” FC remarked, “the manager just newly educated saw the possibility and acted upon it.”

Similarly, during the 1994 Olympic Games, the municipality was encouraged to create a training circuit. The idea was realised in collaboration with welfare, historical and fishing organisations, together with a nursing practitioner and two individuals interested in nature. To gain access to the island, a bridge was built with a path to the tip of the island. The manager ensured accessibility and coordinated the overall design, drawing together the various elements. A tendering process was put into motion. For the handrail of the bridge, a competition was set up. The winning design was based on the appearance of an old fishing method (called Kattis). The competition process had to be approved politically, which was no problem for the councillor, as the manager recalled: “We should have a bit of fun with having a competition” – and that was the beginning of the Island as a publicly accessible recreational area. The municipality built the training devices with help of a local athletics trainer and expert sports commentator

and simple boards added information about the area's habitat and birds, and the history of the local timber floating. The island has won an award as the recreational space of the year in 1995 by the county, making them proud. Then followed some years in which no significant changes took place in Øya.

4.2 Finding synergies

Thirdly, synergies between the formal and the informal, between those who formally decide and those who informally take initiatives, proved to be decisive for the place making of Øya. WD remembered that during the late 1990s, early 20ties the area was completely overgrown and virtually impassable, given over to insects and birds. FC and RD also remembered the area along the canal as densely forested and that it was almost impassable. FC and some of his students cleared the area. After that, they saw more people using this part. FC added, "I took with me students from school with learning disabilities. Doing something active and teaching them about the local history and biology is how they learn. They are very good at finding facts, however, understanding relations is difficult. To understand the meaning of the lake, for the floating of timber, the island is great to relate history to what they actually see."

The fishing organisation and Rotary approached the manager with the idea of using the long side of the island to recreate the space's former state. "We have been collaborating all the way in this recreational space," FC explained. RD found it a great area, but "no one used it since it was hard to get to." The many trees and undergrowth made it impossible to use the long side of the island. RD described how "the fishing organisation and Rotary cleaned up and got the area back to what it should be." Rotary built the benches and the pavilion. They applied for funds themselves and used private actors for the practical work. They dug up the vegetation in the small creek to get the water flowing around a little island again, creating a habitat for fish, at the same time keeping the islet untouched and suitable for birdlife. There was some resistance from the ornithological society, FC remembered, "since the area was grown over, it attracts rare birds and in addition building in a bird conservation area, they wanted to protect the entire area." FC remarked, "this is why it is important to work with the municipality in relation to what we did." The manager "was watching us you could say," FC said with a smile. The municipality, the manager remembered, applied for lottery funds and had some money

that could be used to support the volunteers. “You have to help a bit ... we just have to use people around us that want to do something, in this way they also develop ownership, those helping and the students ... getting the feeling that this has to be protected,” the manager explained.

Some members of the fishing organisation wanted to clean up all the small creeks, making it possible for trout to inhabit those as well. However, FC remarked that “trout has never gone up the creeks.” The creeks are nevertheless important since they bring food from the forests, the shallow water allows insects to grow and there are frogs here every year in May. “I think with the two bridges and the creeks we got an interesting and varied place to wander,” FC said, continuing: “collaborating has made this a better place, it had kind of a synergy effect, because we in the fishing organisation are concerned about the fish and fishing rights for everyone.” On the other hand, the manager was concerned about nature and was ensuring that the existing landscape would be taken care of.

4.3 Long-term collaboration

Fourth, a long-sighted perspective for those involved is needed. The deputy of operations (OD) explained that they dealt with the upkeep of place themselves, with “no approvals of any kind from a political side or anything like this.” The manager administers matters to a certain extent, but decisions are made on his behalf: “At least that’s how I do it anyway, not sure the manager always agrees,” OD added with a smile. He said: For many things, it is not necessary to involve architects and go to the very top of decision-making, it is much more time effective to make decisions ourselves as long as everything is working. However, it is important that we take part in planning, so there is a possibility to express what we think from a practical side. At Øya, we cut the grass and take the trash and occasionally we put up signs or attend to forest management. The long side of the island Rotary is taking care of, but I am a bit uncertain about what Rotary is thinking about the upkeep. They have used a lot of time here but now it looks like they have not taken care of it. This was also in the newspaper, that Øya was growing over. That was just that it wasn’t cut grass here lately, not a scandal anyway, but it is interesting what Rotary is thinking of doing.

RD explained that they were planning to get together in September 2018, cleaning the area. They had people with the right equipment in the organisation. He said that the municipality was good at maintaining the space and the paths, at least in the areas where they were operating. RD was hoping for the municipality to take over the upkeep of the long side of Øya: “But it will probably be a while before that will be effectuated.” The municipality had not been as engaged as Rotary wished them to be: “There was no resistance neither have they supplied much for the upkeep, finances have been applied for by both Rotary and the fishing organisation. The municipality is surely very satisfied with the efforts that have been made on a voluntary basis.”

OD explained, however, that no one had approached them to take over responsibility. He added: “Taking over is not so simple either, as there are no resources for it.” The expectation that the municipality takes care of things automatically is wrongly assumed. There is a lot of work already and more housing estates and projects are planned, however, the keeping of these spaces cannot fall into the responsibility of the municipality without further resources. The budget is the same each year, and so are the number of employees. The OD added: “I do everything I can but time and money is limited”. The curiosity in his voice revealed that he was interested in and not well-informed about the practices of the organised users group, Rotary. However, he emphasises that it is a great collaboration either way. RD explained: “We decide ourselves how to maintain the long side of the island”. People would approach them if there is too many trees taking out, for example, so they have to keep a balance within their practices. For bigger changes the municipality is contacted, a neat relationship is good to have and the relation to the manager is usually a good one. And yet, it seems like everything that is done has some enthusiast, frontrunners that start something and then it is not taken care of. RD mused, “There is no one pondering about it, so organised user groups, such as the fishing organisation and Rotary have to take care of such things. It seems like it is much easier for volunteering organisations to do such things than it is for the municipality. They have a lot of other things to do as well.”

In the same tone, the FD explained that the keeping of Øya was because of people taking an initiative and the municipality, but especially the manager. The manager has taken care of the initiative from the organised users side, scrutinising the laws and regulations and supporting the initiative where possible. The FD explains: “that is the advantage. At

Øya we have the possibility to influence the entirety, a lot of times everyone works on their own but here we could collaborate so that everyone is happier.”

OD told of a newspaper article referring to a caller asking about additional rubbish bins out at Øya, but said that was the first time he had heard of that wish; “and suddenly I read about it in the newspapers – that I think was badly done.” In this way, the newspaper created a bad atmosphere, a direct conversation would solve this so much easier. The OD continued, “it is a terrible thing to hang each other out through the media.” FC also read about the rubbish bins, but did not understand the argument: “you cannot expect to just have bins exactly where you want to leave your rubbish.”

4.4 The formal management organisation is part of the solution

Fifth, we emphasise the need for the formal local management organisation to be involved – and actively engaged. “In the municipality we had fun with Øya,” the manager said, showing pictures of Øya taken by schoolchildren. All the green spaces in the municipality, such as urban forests, schoolgrounds, playgrounds, town squares and graveyards, were managed by the parks unit and “that is the reason why we have a strong park unit.” In addition, the grass is cut by an organisation employing people with disabilities. Otherwise, the municipality would not manage to keep all the green spaces in order. The parks unit is part of the technical department, which is very important. Because the roads, agricultural and surveying units are all part of the technical department, it allows for a quick exchange of information regarding new building projects without having to order any services. Also, the process of digitalising graveyards is made much easier this way, ensuring a continuous conversation and finding solutions quickly. The ongoing question in the country about green space units being part of the cultural affairs department, is not something the manager believes in. The technical department has the tools and the understanding and that is what is more needed for green spaces. Nevertheless, the cooperation with cultural affairs is necessary, applying for funding usually goes over culture and cooperation for developing strategies is key. In this way, the issue at hand is illuminated from all perspectives: public health, schooling, cultural and technical.

More and more spaces with stable budgets makes it difficult for the municipality, but they take over some tasks from other units. The manager explains: “In this way, it is possible to write invoices which add to our operational budget and that is quite important for the green space unit to be able to maintain machines and spaces. When it comes to maintenance, organisations and clubs are of great help, both in summer and in winter.” These relations are also something the OD recalls. The manager has been working for a long period of time and that is an advantage, having an overview over the resources within the municipality and within the organisation, to whom to talk to in which circumstance. Purely practically, he mentioned that it is a lot of time spent on flowers, planting, watering, fertilising, weeding and changing them three times a year. The OD continues: “Flowers are pretty, however looking at the playgrounds there is a lot being old, and safety is questionable, so I would rather spend time and money on these things than watering flowers. Every time there is something developing it is about an easy upkeep and that in a long-term perspective. That is why I think goats at Øya would be a great solution.” Table 3 summarises the three layers of discourse synthesised of the stories told.

Table 3: The three layers of discourse summarised for public actors, organisations and users.

Actors	Discourse		
	Ontology	Normative	Strategies
Public organisation	<ul style="list-style-type: none"> • Achieving a space for people with their contribution • It is important that it (Øya) was taken care of 	<ul style="list-style-type: none"> • We have to take advantage of those people around us • It's important that people are happy with the job I'm doing 	<ul style="list-style-type: none"> • Take responsibility • Involvement in planning to apply long-term upkeep: practical thinking • Having a strategy for green spaces • Structural organisation: technical knowledge and being efficient through communication and internal collaborations
Organised users	<ul style="list-style-type: none"> • People who appreciate the same area • The municipality that is us 	<ul style="list-style-type: none"> • Clean the area to make it available again • Here I grew up and it was easy to get to, our playground 	<ul style="list-style-type: none"> • Follow your interest and act: synergy effects • Collaborate: Discuss bigger changes and small issues are left to the organisation
Unorganised users	<ul style="list-style-type: none"> • A place taken care of • Untouched nature – allowed to just be 	<ul style="list-style-type: none"> • Magical with the wild flowers • 	<ul style="list-style-type: none"> • Communicate the benefits of walking in nature & social benefits • Enhance the appreciation for something that is there

5 Discussion: uniting multiple perceptions on quality green space

The Øya case provided insights into what influenced the creation of a sense of place. Each of the five stories, crystallised out of the conversations, forms a significant part of this transformation. Despite the need for collaborations to create and ensure place, the relinquishing of responsibility is necessary in light of limited resources. The public organisation at Øya report on limited finances and time. This is in line with the international literature, which refers to austerity in the UK and USA (Bollier and Helfrich, 2014; Jansson and Randrup, 2020), and in the Nordic countries, where green space managers find funding for new constructions to be adequate, but for maintenance to be limiting (Randrup et al., 2020). Sparse resources are in general challenging Norwegian place-keeping as Norwegian managers reported stable budgets, but with more spaces to be managed within the same budgets (Fongar et al., 2019b). Limited resources are also noticed by the organisations in this case, whilst explaining the situation of the municipality. Missing financial and human resources forces the manager, and the municipality, to prioritise. From a practical perspective, some operational tasks could be simplified. However, the most pronounced issue highlighted is that practical experiences is incorporated in planning. The knowledge of practical applications can thus lead to a more efficient and cost saving long-term management. For example, going back to traditional methods, Øya as grazing ground, would simplify management efforts. This link is highlighted in the strategic management regime proposed by Randrup and Persson (2009), in creating a formal relation between the political, tactical and operational work to ensure quality green space. See also Figure 2.

THE BONDS TO PLACE

Bonds to place are created by organised and unorganised user groups and their ontology of discourse is anchored in motivations. The motivation of those taken the initiative is rooted in their childhood place. They are bonded to the place since long, which made them act – in this case by experiencing that the place was not being kept, which led to the idea of taking care of the place themselves. The local attachment to a place seems evident, as green spaces form the background for social interactions and thus also create forms of place attachment (Aliyas and Masoudi Nezhad, 2019; Romolini et al., 2019).

ALLOW FOR THE UNFORESEEN

The role of the manager played a central role in taking an initiative, a chance taken to ensure access with the landfill. This was the starting point of Øya as it is today. This happening in turn encouraged the initiative of the organised user groups.

Another opportunity arose with the Olympic Games and the accompanying funding. There was no rules or regulations from the political side, attributed to the managers' talent of presenting a balanced plan, keeping the costs to an appropriate level. This indicates the managers' role as being both operational in actually maintaining the area, but also being strategic in daring to make decisions, sometimes at the fringe of his or her competences and within the legal responsibilities. Such deliberate, dual roles, has previously been described as strategic management (Randrup and Jansson, 2020; Randrup and Persson, 2009).

FINDING SYNERGIES

The building of the bridge and the path encouraged the organised user groups to act. Their motivation is rooted in the history as well as in the individuals' interests and perception of quality. Not only do they have bonds to the space formed in their childhood, they also have intentions for the goods of the place and what they perceive as quality in the place. The fishing organisation for example was happy to get better access for the public to fishing grounds. Rotary got the space back to its former accessible recreation area and the municipality got a diverse green space for the residents. In this way one development led to another, creating synergy effects. Fors et al. (2019) reports on similar effects, inspiring others by engaging residents in the development of woodlands shared between the local authority and the residents. Likewise, Spijker and Parra (2018) found that neighbours found inspiration among each other, leading to the greening of perceptions, as well as to community building.

Long term collaborations

The public organisation is reliant on organised users for the upkeep, for the place to be appealing to the organised and unorganised users. Acting upon the initiative of the organised users, the manager agreed with no hesitation to facilitate their needs and

continued to play a minor role in the arrangement as adviser in the background. This observation is in line with other research, where local authorities play an important role in green space management arrangements, co-governing by bringing creative local actors at the forefront of decision-making (Mattijssen et al., 2017). The long-term collaboration at Øya is based on the historical and continued voluntary work provided for the municipality. In Øya, the municipality takes care of the grass cutting, rubbish cleaning and safety issues and the organised users clean areas on days of volunteering, using their own equipment. The resources set forward by the municipality, the social network of volunteers and their own financial resources, allow them to organise the upkeep themselves. This is in line with previous research, where resources available, social and financial capital, were key to the continuous success of the arrangement managing green space (Buijs et al., 2016; Mattijssen et al., 2017).

We found a clear distinction of the roles within the upkeep of the place. Communication is a key to success and yet, communication between the organised users and the public actors is not always straight forward, it might even in some situations be flawed. However, the actors involved have known each other for a longer period, and they have worked together on several projects. This long-time relationship simplifies communication. And yet, uncertainties remain in the roles of upkeep. Also, the involvement of a newspaper, reporting about wishes for Øya, instead of direct conversations created a tense atmosphere for a while. This points on the multiple quality perception even in trust based long time relationships.

THE FORMAL MANAGEMENT ORGANISATION IS PART OF THE SOLUTION

This is based on the fact that local authorities do have the formal responsibilities of the majority of (urban) public green spaces (Carmona et al., 2008). The collaborations between departments and the technical expertise of the green space unit allowed for several advantages. The ease of communication, and the exchange of knowledge within the municipal technical department allowed the green space unit and the manager to provide resources and to facilitate the projects with permissions, plans and drawings. The knowledge of the manager of the municipal organisation, the actors that are important for the different decision-making and the knowledge of actors outside of the municipality contributed to the creation of the place. The collaborations between

departments, with for example the department of cultural affairs, allowed for further resources that could be applied for as well as the illumination of issues from all sides enhanced the understanding of the importance of the green place.

As described, lack of financial and human resources forces the manager, and the municipality, to prioritise. From a practical perspective, some operational tasks could be simplified. However, the most pronounced issue highlighted is that practical experiences is incorporated in planning. The knowledge of practical applications can thus lead to a more efficient and cost saving long-term management. For example, going back to traditional methods, Øya as grazing ground, would simplify management efforts. This link is highlighted in the strategic management regime proposed by Randrup and Persson (2009), in creating a formal relation between the political, tactical and operational work to ensure quality green space.

6 Conclusion

Initiatives in green space management that take over responsibility for the upkeep are a relative common mode of management in Norway. In this case study, we contribute with evidence on strategies uniting multiple perceptions of what makes a quality public green space. The virtue of the case study is its context-dependency and the strategic discourses brought forward, and the results should be considered in this context. Nonetheless, the case of Øya provides insights into successful long-term place-keeping.

We identified five stories of particular relevance for the creation of a place. The motivation of those taken the initiative is rooted in their childhood place. The place not being kept so it could be used as they used to, let to the idea of taking care of the place themselves. However, the managers' initiative, the chance taken to ensure access (with the landfill, the bridge and the path) was the starting point for the organisation to act. The locals wanted the spaces as remembered and access to fishing locations as well as ensuring natural spawning grounds. In this way one initiative let to the other, a kind of synergy effect. The long-term collaboration is based on the continuous voluntary work and the basic upkeep by the municipality. And yet, the formal management organisation is a central part of the solution. The inter-municipal collaborations and the technical expertise as well as communication allowed the green space unit and the manager to

free up resources, to be quick about decisions and the knowledge of the organisation. In the end, actors both within and outside of the municipality contributed to the creation of the place. The public organisation embraced the initiative taken by the organisation, doing all they can to facilitate them and relinquishing the responsibility of upkeep to the organisation. The long-term management relies on this formalisation of the arrangement, and the self-organisation of the organisation. The different motivations let not only to the creation of the place, but also to ensure the keeping of the place. The individuals involved are engaged because they want to change and maintain the place. But they are also stimulated to do so, and to gain and maintain motivation. By doing so, they are more likely to be consistently involved in the long-term management of their place.

In conclusion, we propose that from a management perspective, in the creation of a place five stories have to be considered; (i) identify the bonds to the place for activating the local engagement; (ii) allow for the unforeseen – maybe even take a risk; (iii) find synergies between stakeholders, (iv) think in long-terms, and (v) as a management organisation – be actively engaged too.

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APPENDICES

APPENDIX I

LITERATURE REVIEW ON NORWEGIAN GREEN SPACE MANAGEMENT

No	Author / year	Type	Editors/ Institution	Dimension	Title, Method & Content
1	Gabrielsen, Egil 1971	Working notes	The Norwegian Institute for Urban and Regional Research (NIBR)	<ul style="list-style-type: none"> • Research International • Local • Planning 	<p><i>Nordisk prosjekt om urbane friarealer - Arbeidsnotat med forslag til avgrensning av prosjektet</i> (In Norwegian)</p> <ul style="list-style-type: none"> • Literature Review - Summary of different green planning projects - Services of green spaces • Narrowing down the research project
2	Elvestad, Siri 1976			<ul style="list-style-type: none"> • Research national 	<p><i>Evaluering av nære turområder. En naturstudie basert på de naturgitte forhold og Byenes grøntareal - rekreasjon – planlegging</i> (In Norwegian)</p> <ul style="list-style-type: none"> • Information system: better planning and operations of recreational resources in the municipality • Project planning and operation of municipal spaces have to use a combined quantitative register and evaluation method to get a complete impression for resource quality • Users wishes and needs for activities have to be the baseline for typing and evaluation of spaces - suitability evaluations for different activities have to be carried out and connected to users' preferences
3	Mydske, Per Kristian 1978	NIBR Report 45	The Norwegian Institute for Urban and Regional Research (NIBR)	<ul style="list-style-type: none"> • Research Regional (County) planning 	<p><i>Planlegging og forvaltning: makt og avmakt i den regionale planlegging</i> (In Norwegian)</p> <ul style="list-style-type: none"> • Problem 1: vegetation categories: which characteristics and which are experienced are attractive? • Functional aspect (whether we perceive a vegetation type as satisfactory in relation to our interests) disposition of interests, professional background and purpose we have • Aesthetic aspect (whether the visual appearance of vegetation seems attractive) there is a common human recreational pattern on specific aesthetic stimuli in vegetation structure ... • Larger area: different management: satisfying many groups' interests - some groups must be prioritized in small areas • Accessibility: psychological and actual
4	Elvestad, Siri Bennett, Roger Helvik, Kjell Totland, Kjell 1982	Pre-project Report	Geografisk institutt Universitet i Bergen	<ul style="list-style-type: none"> • Research Municipal • Evaluation: registration (mapping) 	<p><i>Fritids-ressurser - Fordeling og Kvalitet</i> (In Norwegian)</p> <ul style="list-style-type: none"> • Literature Review - Nature resources in focus: functional characteristics – Landscape evaluation for spare time aims expert based • Suitable theory and methods to evaluate, analyse and categories resources

No	Author / year	Type	Editors/ Institution	Dimension	Title, Method & Content
5	Hage, Torild Elvestad, Siri Totland, Kjell 1984	Report NR 1	Norsk Institutt for Vannforskning - Geografisk institutt Universitet i Bergen	<ul style="list-style-type: none"> • Research • Municipal • Evaluation • Mapping (for planning) • operations 	<p><i>Parker og Grøntanlegg-Ressursdatabase- Fritids-ressurser-Fordeling og kvalitet (In Norwegian)</i></p> <ul style="list-style-type: none"> • Evaluation of landscape: Literature review & development of a new system - Establish a system for saving of recreational data, connected to coordinates, and thematic data • Develop methods and routines that make it possible for local management to keep a running overview of their recreational resources, distribution (connected to the geographical pattern of users) and the nature (beskaffenhets) of the resources - Create a system that is easy to use in the daily operations of green spaces.
6	Geelmynden , Anne Katrine 1984	Report from NLVF pre- project	Institutt for landskapsarkitekt ur - NLH	<ul style="list-style-type: none"> • Research • Municipal • Planning for operations 	<p><i>Parkskog og Naturmark i bystrøk - skjøtsel, bruk, planlegging (In Norwegian)</i></p> <ul style="list-style-type: none"> • Filed visits and interviews: Reveal the extent of the problem - Literature review: Reveal the extent of the problem and collect knowledge that is available: Conservation of natural vegetation types in recreational areas near the cities
7	Ringard Skjøstad 1985	Report	Norges Veiforbund - institutt for jordskifte og arealplanlegging	<ul style="list-style-type: none"> • Research • Municipal • Planning 	<p><i>Friidrettsliv i nærområder - utviklingen i tettstedsnære områder fra 1955-1985 (In Norwegian)</i></p> <ul style="list-style-type: none"> • Land Survey: Detecting potential outdoor Areas - Valuation: landscape & quality; Availability registration of planned outdoor recreation areas: Activity survey • Outdoor recreation development over the past 30 years: How did the possibilities change and what will the possibilities be – develop methods for local planning
8	Strande & Brantsegg 1986				<p><i>Use, operation and maintenance of green public areas: report: 1</i></p> <ul style="list-style-type: none"> • Bodø: Conflicts between outdoor life and forest owners, sports and owner interests • Steinkjer: no important conflicts: because of clear agreements • Trondheim: urbanization that happens with the development of cabins: expansion of parking lots, paths and sports grounds: conflicts of sports interests and outdoor activities • Molde: sprawl through a lack of definition of marka area? Conflicts of interest between outdoor activities and sports needs for development: forests operations and values connected to forests – • Bergen: Little attention to management: there is a central perception that marka areas have to be protected • Kristiansand: Conflicts between the road's high standard and interest of nature practitioners, Outdoor life and forestry conflicts, sprawl into marka areas • Drammen: Municipal plan for green areas • Fredrikstad: conflicts with different uses of marka -

No	Author / year	Type	Editors/ Institution	Dimension	Title, Method & Content
9	Nordisk Ministerråd (eds.) 1987	Planning Agency, Ministry of the Environment, Report no. 8	Nordisk Ministerråd - København	<ul style="list-style-type: none"> • Research: Scandinavia • Planning • Partnerships (Political) 	<p><i>Nærrekreasjon: Friluftsliv og fysisk planlægning i Norden (In Danish)</i></p> <ul style="list-style-type: none"> • Expert groups in 5 Nordic countries – Law review - Keep connection to political level; focus on municipal physical plans • Everyday outdoor recreation has importance in all Nordic countries - Need for more in a world of increasing technological developments (reduced work hours) private economics do not allow to travel away anymore - Decrease of such areas because of compact cities... - Most important for immobile groups - This is part of municipal physical planning, municipal leaders' task to ensure area possibilities for recreation
10	Løvdal 1989	Master thesis	NMBU	<ul style="list-style-type: none"> • Research • Municipal • Mapping 	<p><i>Forvaltning av grønn-områder i ressursknappe tider (In Norwegian)</i></p> <ul style="list-style-type: none"> • Literature Review and Interviews with people that are within this situation to find solutions and contemporary questions in the system • Concrete plan/ measures on what to do in resource shortage times to ensure quality green spaces. Including plans for cost calculation and budgeting
10	Bråttå, Hans Olav 1990	Working Notes	NIBR Working notes 1990: 121	<ul style="list-style-type: none"> • Research • Municipal • Planning 	<p><i>Friluftsliv areal i og nær tettsteder: Hva slags og hvor mye (In Norwegian)</i></p> <ul style="list-style-type: none"> • Literature review - Nordic authors handling of classification criteria and area norms for outdoor recreational areas in and close to urban areas
12	Langmyhr, Tore 1991	Working Notes	NIBR - Working notes 1991: 130	<ul style="list-style-type: none"> • Research • Municipal • Planning 	<p><i>Bynære turrområder-planbehandling i ti norske kommuner (In Norwegian)</i></p> <ul style="list-style-type: none"> • Review of planning - document and telephone interview • Exemplify and compare municipal handling of city forest areas in planning • Make an overview of the current situation of close to home recreational areas- basis material to give a better start point for further discussions
13	Nyhuus, Signe Thøren, Anne-Karine 1992			<ul style="list-style-type: none"> • Research • Municipal • Evaluate planning 	<p><i>Grønnplanlegging. Evaluering av planarbeidet i 8 norske kommuner (In Norwegian)</i></p> <ul style="list-style-type: none"> • Evaluation of planning work • Green structure in the city has many different values and functions: among other things, importance for landscape experience, biodiversity, recreation, play etc.

No	Author / year	Type	Editors/ Institution	Dimension	Title, Method & Content
14	Næss, Petter 1992	Report			<p><i>Natur- og miljøvennlig tettstedsutvikling: faglig Sluttrapport (In Norwegian)</i></p> <ul style="list-style-type: none"> Changes in green structure are a result of planning - Green has a strong municipal organization: own head of state (respected in administration and among politicians) In the last years: green has become part of cultural agency and the boss does not have a green background - Aim of plans: general plans: ... emphasize well-being points ... preserve productive agricultural land, protect natural areas, prevent scattered buildings to the disadvantage of agricultural land ... - Municipal plans: nothing supplementary written area part: no formulated goals
15	Gabrielsen, Egil Kjellaug, Eik 1992	Hefte 1	Norges Landbrukshøgskole	<ul style="list-style-type: none"> Research Municipal Evaluation: Mapping for maintenance 	<p><i>Grønnanleggsforvaltning i ressursknappe tider - Hefte 1 (In Norwegian)</i></p> <ul style="list-style-type: none"> New Code Layout that can be adapted to Norwegian Standard 3420 The purpose is to gather experience from plans in operation to improve operating arrangements and provide the basis for evaluating operations for new plans
16	Gundersen, Frode Nyhuus, Signe, Thoren, Anne-Karine 1994	Working notes - MILKO M project	Senter for utvikling og miljø, UIO - NMBU	<ul style="list-style-type: none"> Research Municipal Planning 	<p><i>Grønnstrukturens vilkår i kommunal planlegging, Bakgrunn, teori og metode (In Norwegian)</i></p> <ul style="list-style-type: none"> Literature review: green structure's terms in municipal planning in the construction zone in cities and towns over the last 30 years - municipal planning - Multifunctional function Project purpose (1) gain more knowledge about changes in the extent, content and functionality of the green structure from 1965-1993 (2) reason why changes have been made to the green structure (3) how environmental policy and environmental values and norms are related to green structure goals have been implemented at the local level (4) find possible changes to planning and decision-making practices
17	Uberg, Hilde 1995	Report from the 19. conference on parks, sport and recreation	Sandes kommune - Parkavdelingen	<ul style="list-style-type: none"> Practice Municipal Planning 	<p><i>Ut i det grønne - om kommunenes satsing på friluftslivet (In Norwegian)</i></p> <ul style="list-style-type: none"> Practice: experiences - The municipality's investment in outdoor life Show how they work with healthy city project Every inhabitant of cities and towns has more and more space at their disposal. For 21 Norwegian urban areas, average land use has increased by 23 per cent from 1970 to 1990 - a significant part of urban growth is on agricultural land - Norwegian housing standards are very high: A denser city leads to increased use and strain on green spaces and children's play areas. This indicates a higher standard and increased care for the green areas. One must also create a far greater variety with more experience opportunities for all population groups - Nature areas must be secured and green corridors with paths that provide accessibility internally in the area and to the hiking field must be worked up in step with the densification

No	Author / year	Type	Editors/ Institution	Dimension	Title, Method & Content
18	Rudi, Gunn Elin 1995	Master thesis	NMBU	<ul style="list-style-type: none"> • Research • Municipal • Evaluation: Mapping 	<p><i>Grønnstruktur i byer og tettsteder: verdier, arealbruksinteresser, loveriket (In Norwegian)</i></p> <ul style="list-style-type: none"> • Literature review - what values and area use interests are connected to green structures and how can contemporary rules contribute to ensure these structures? • Definition of terms - Overview of the elements that are part of green structure
19	Thorén, Anne-Karine 1996	Final Report on the working note series (MILKO M)	NIBR - Redaktør Terje Kleven (forskningsleder MILKOM)	<ul style="list-style-type: none"> • Research • Municipal • Area planning - connected to General plans 	<p><i>Grønnstrukturens vilkår i kommunal arealplanlegging på Høynefoss fra 1965-1995 (In Norwegian)</i></p> <ul style="list-style-type: none"> • Empirical data - case study, Background variables (driving forces outside the municipality) and independent variables (local conditions) document studies and informant interview • Contributing to empirical data: Be able to handle green structure issues more thoroughly than we have done so far. Question: What conditions does the green structure have in municipal land use planning -> green structure in general / municipal plans, zoning / building plans and building case management
20	Nyhuus, Signe 1996	Working notes - Milkom 13/1996	Norges Forskningsråd - Norsk institutt for by- og regionalforskning	<ul style="list-style-type: none"> • Research • Municipal • Area planning 	<p><i>Grønnstrukturens vilkår i kommunal arealplanlegging i Sandelfjord fra 1965 - 1995 - Sluttrapport fra prosjektet "Grønnstrukturens vilkår i kommunal arealplanlegging 1965 - 1995" (In Norwegian)</i></p> <ul style="list-style-type: none"> • Case study: study of plans, documents, political speeches - central informant interviews • K- and N-series: registration method for green structure: How the green structure changes in extent, content and functionality • Factual changes of green structure over time - studied in light of local planning and decision-making processes and background
21	Nyhuus, Signe Thorén, Anne-Karine 1996	Working notes - (MILKO M)	Norsk institutt for by- og regionforskning - Norges forskningsråd	<ul style="list-style-type: none"> • Research • Municipal (National) • Planning 	<p><i>Grønnstrukturens vilkår i kommunal arealplanlegging 1965-1995; Endringer av grønnstrukturen i noen utvalgte by- og tettstedsområder fra 50-tallet til i dag (In Norwegian)</i></p> <ul style="list-style-type: none"> • Landscape ecological approach: aesthetics and visual impressions: geographical location in space, including human activity • 4 Case studies - Mapping: Aerial imagery, maps, digitization of area and the content changes of the green structure. • Knowledge of how the changes in the green areas have been carried out so far

No	Author / year	Type	Editors/ Institution	Dimension	Title, Method & Content
22	Thorén, Anne-Karine Opedal, Ståle 1997	Working notes -	NIBR	<ul style="list-style-type: none"> ● Research ● Planning 	<p><i>Grønnstrukturen i byer og tettsteder: evaluering av grønnplanlegging i norske kommuner (In Norwegian)</i></p> <ul style="list-style-type: none"> ● Questionnaire survey to all Norwegian municipalities that have made green plans ● Overview of who is responsible for the green plan in the municipalities - Informant interview and document study ● Overview mapping of green planning today based on quantifiable data ● Find out processes of green plan planning: who is involved, main contributor, difficulties, knowledge base of plans, strategies; get an overview of how the municipalities today work with green planning issues and how such issues are incorporated into the area plan of the municipal plan
23	Thorén, Anne-Karine 1998			<ul style="list-style-type: none"> ● Research 	<p><i>Utarealer i boligområder: bruk og betydning; en kunnskapsoversikt (In Norwegian)</i></p> <ul style="list-style-type: none"> ● Securing accessible green areas through binding plan documents, agreements and acquisitions; primarily within the building zone where the area conflicts are greatest (St. Report no. 29 1996-97) - aim to ensure coherent landscape values that can increase the experience value in the outdoor areas. <p>An important element in this is the safeguarding and management of cultural heritage and cultural environments</p>
24	Thorén, Anne-Karine 1999			<ul style="list-style-type: none"> ● Research 	<p><i>Friluftsliv i bystrøk: evaluering av "friluftspakkeprosjektet" til Direktoratet for naturforvaltning (In Norwegian)</i></p> <ul style="list-style-type: none"> ● At the Nordic level, a majority of the park administrations work with city parks, streets, playgrounds, forests, green areas in residential areas and squares and places ● The park administrations' involvement in municipal planning is different from country - What we included in the planning in the survey are overview planning, detailed plans, building permits audit, marketing, green plans, tree plans, park policy and more, and environmental education - in Norway there are fewer people who says that they are working with involvement in the municipal work on planning
25	Guttu, Jon Thorén, Anne-Karine 1999	Report – Guidance book	Report 1 and 2 for Ministry of Environment	<ul style="list-style-type: none"> ● Guidance book ● Municipal ● Densification planning ● politics 	<p><i>Fortetting med kvalitet: bebyggelse og grønnstruktur (In Norwegian)</i></p> <ul style="list-style-type: none"> ● Literature Review - empirical knowledge obtained from investigations of the densification - case studies ● The production of the guidelines is divided into three parts: <ol style="list-style-type: none"> 1. Why densification? Advantages and disadvantages of the densification strategy 2. Where can one densify within the urban area and where should one not densify? Municipal Level. 3. How does the condensation work? Examples of zoning and development plan level with project requirements.

No	Author / year	Type	Editors/ Institution	Dimension	Title, Method & Content
26	Nyhuus, Signe 2000	Article	Book chapter in Fiskaa og Skjeggedal (ed): Planlegging og bærekraftig utvikling	<ul style="list-style-type: none"> Analysis methods of green structures to aid planning 	<p><i>Miljøvennlige byer har også grønne områder (In Norwegian)</i></p> <ul style="list-style-type: none"> The public sector's main efforts for outdoor life have long been concentrated on securing and organizing "green spaces" in physical planning - Outdoor life is thus understood as a technical matter, where problems are "solved" with the help of an arsenal of planning tools: user surveys, maps, zoning, physical facilitation etc - Such a neutral management paradigm invisible the value of the natural meeting to the individual and importance to society, and portrays the outdoor life issues as uninteresting for political will - Through different time periods various problems and thus management actors have arisen, and these have continued to exist, side in a conglomerate of responsibilities. This has made the players uncertain about their role, and the result has been a messy and inefficient management
27	Direktoratet for naturforvaltning 2001	DN-håndbok guidance book			<p><i>Friluftslivsområde: offentlig sikring og forvaltning (In Norwegian)</i></p> <ul style="list-style-type: none"> A more agreement- and partnership-based management is in line with a general trend in social development, where the authorities rather than strict management focus on cooperation and agreements with private actors in order to have a breakthrough for public policy and objectives
28	Falleth, Eva Irene 2002	Working notes 2002: 19	NIBR		<p><i>Forvaltning av bruks- og verneinteresser på Søndre Jeløy: landskapsvernområde i Moss kommune (In Norwegian)</i></p> <ul style="list-style-type: none"> Planning according to PBL is based on principles of participation, transparency and mutual information and cooperation obligation between different levels of government, and between the administration and the local population - Affected individuals and groups must be given the opportunity to actively participate in the planning process, and a minimum requirement is the announcement of start-ups and public consultation rounds. Our claim is therefore that planning itself is not sufficient to preserve urban outdoor areas, but that the importance of the areas as mobilising civil society, is a contributory explanation
29	Gunderson Vegard Sverre 2004	Report	Report for Skogforsk	<ul style="list-style-type: none"> National (all urban forests) Management: operations and governance 	<p><i>Urban skogbruk: forvaltning av skog i by- og tettstedkommuner (In Norwegian)</i></p> <ul style="list-style-type: none"> Literature review: What should be emphasized and what should be prioritized in planning and management? How should this be done? What is the benefit to individuals, communities and forest owners? Literature review - broad professional and international presentation of the field of urban forestry - describe some key issues related to these forests: area, values, functions, some sketches for management, and trends for the future - need to develop management models and plans with greater focus on human behaviour and nature experiences - linked to a better planning tool and methods for more locally adapted forest management

No	Author / year	Type	Editors/ Institution	Dimension	Title, Method & Content
30	Gundersen; Frivold; Lofström; Jørgensen; Falck; Øyen 2005	Article	Journal: Urban forestry & urban greening	<ul style="list-style-type: none"> • Research 	<p><i>Urban woodland management - the case of 13 major Nordic cities</i></p> <ul style="list-style-type: none"> • Political tactic: plant ideas with politicians so that they themselves come up with it • Little written about what good green plant maintenance really is and what people put into it when they refer to plants as well-maintained
31	Meland 2006	Article	Institutt for idrett og friluftsliv - Høgskolen i Telemark Journal: Utmark Nr.1-2006	<ul style="list-style-type: none"> • National • Recreational planning 	<p><i>Et kritisk blikk på norsk friluftslivsforvaltning (In Norwegian)</i></p> <ul style="list-style-type: none"> • Review - empirical case studies - a critical look at the connection between ideal and reality in the management of outdoor life • In order to achieve a targeted safeguarding of the green structure in cities and towns, the Environment Directorate recommends that the municipalities prepare a technical study of green structure • It is also important that the basis for planning for green structure has gone through alternatives for implementation, how land should be acquired, level of preparation and facilitation and how management is financed and implemented
32	Stokke, Knut Bjørn; Anker, Mathilde; Omland, Atle Skogheim, Ragnhild; Skår, Margrete; Vindenes, Erling 2006	Working notes	NIBR, NIKU, NINA Produced under the strategic institutional program (SIP) Outdoor recreation in change	<ul style="list-style-type: none"> • Research • Municipal • Recreation • Area planning • Tactics 	<p><i>Planlegging og forvaltning av urbane friluftsområder - En kunnskapsoversikt (In Norwegian)</i></p> <ul style="list-style-type: none"> • Case studies in two urban municipalities - survey in both municipalities among representative sample of city population: Impression of how different outdoor recreation areas are used and valued - how authorities are able to secure and manage urban recreational areas, including important landscape values such as cultural heritage and cultural environments, through area planning and the Building Act (PBL) • Provide a comprehensive and systematic overview of knowledge in the field. Should the municipality safeguard the population's outdoor interest? Do we lose in competition with the development and business interests? How does collaboration between different actors' work? (Governance trend: the authorities instead of hierarchical governance through regulation, prohibitions and injunctions more strongly focus on cooperation and agreements with private actors)
33	Persson & Randrup 2006	Green facts Article	Lantbruksuniversitetet i Köpenhamn (KVL)	<ul style="list-style-type: none"> • Research • Scandinavian perspective • Park management 	<p><i>Parkförvaltning i Norden - en enkätundersökelse (in Swedish)</i></p> <ul style="list-style-type: none"> • Survey with 15 questions of which 12 were sub-divided in a number of sub-questions • The goal was to be able to create and present an overview and comparisons of the goals of the Nordic park authorities, tasks, organization and activities and to get to know something about what have been the major challenges in recent years and what to see in front of them over the years

No	Author / year	Type	Editors/ Institution	Dimension	Title, Method & Content
34	Tordsson 2008	Article	Journal: Nytt Norsk Tidsskrift 1/2008	<ul style="list-style-type: none"> • Municipal Institutions • Outdoor recreation 	<p><i>Friluftsvivets politisk-institusjonelle marginalisering (In Norwegian)</i></p> <ul style="list-style-type: none"> • Critical review - interviews - How / Why is Outdoors political-institutional marginalized? - historical arguments on why it is not better organized.
35	Stokke, Knut Bjørn; Vindenes, Erling; Skår, Margrete 2009	Article	Nina Lillehammer, NIBR, Norsk institutt for kulturminneforskning NIKU	<ul style="list-style-type: none"> • Research - Municipal • Recreational Areas • Planning and tactics • Partnerships • Evaluations 	<p><i>Lokal forvaltning og planlegging av urbane friluftsområder (In Norwegian)</i></p> <ul style="list-style-type: none"> • Document analysis - interviews with representatives from public administration in municipalities, counties municipalities and county governor cultural department, political parties, organizations and teams • Survey with inhabitants about the use of outdoor areas - how different means are suitable for preserving urban outdoor areas - focus on outdoor recreation management and planning - since the municipality is the central actor of this field - Who is really the defender of outdoor life in the municipal area and outdoor life management?
36	Stokke, Knut Bjørn Falleth, Eva Iren 2010	Article – Journal: Kart og Plan	NMBU	<ul style="list-style-type: none"> • Research - Municipal • Participation in Recreational areas • Planning 	<p><i>Bevaring av bynære friluftsområder – hva betyr deltakelse og mobilisering fra lokalsamfunnet</i></p> <p><i>Preservation of urban recreational areas – the role of mobilization from the civil society</i></p> <ul style="list-style-type: none"> • Empirical studies on the management of outdoor recreation areas under pressure - semi-structured interviews with a number of key informants related to the planning, management and use of urban recreation areas - reviewed current plans and documents, as well as surveys - study local mobilization as a tool for preservation of urban outdoor recreation areas and the extent to which participation and mobilization from the local community mean something for the conservation of outdoor areas
37	Thorén, Kine 2010	Article Journal: Plan	NMBU	<ul style="list-style-type: none"> • Planning – Evaluations (planning) • Green structure 	<p><i>Grønnstruktur i by - hvordan taile endringene? (In Norwegian)</i></p> <ul style="list-style-type: none"> • Literature Review - the blue-green structure's multifunctional function - what happens to it after condensation policy in the 1970s?
38	Durucz, Maria 2014	Master thesis	NMBU	<ul style="list-style-type: none"> • Research • National level • Management 	<p><i>Grønnanleggssvaltning i norske kommuner (In Norwegian)</i></p> <ul style="list-style-type: none"> • Survey and Qualitative interviews - 126 surveys and 19 focus interviews • What is the status of green plant management in Norwegian municipalities: General information - competence - municipal plans - organization - municipal business (business) - plant types - economy - participation and marketing - history - internal considerations?

No	Author / year	Type	Editors/ Institution	Dimension	Title, Method & Content
39	Miljødirektoratet 2014	Guidance Book	Ministry of Environment	<ul style="list-style-type: none"> ● Politics - National level ● Planning - National level 	<p><i>Planlegging av grønnsstruktur i byer og tettsteder (In Norwegian)</i></p> <ul style="list-style-type: none"> ● The guidance book shows how analyses can be carried out, and it reviews relevant topics for planning ● Focuses on the overall green structure of the building zones ● Indicates how municipalities should use a targeted and knowledge-based planning at municipal level to protect and further develop the green structure in cities and towns.
40	Ellen Husåas 2016	Guidance Book	Kommunal- og moderniseringsdepartementet	<ul style="list-style-type: none"> ● Politics: County level ● Planning: National level 	<p><i>Byrom - En idéhåndbok - hvordan utvikle byromsnettverk i byer og tettsteder (In Norwegian)</i></p> <ul style="list-style-type: none"> ● Provides overall and practical advice on how the municipality can develop a city space strategy to work systematically over time in developing urban networks ● Inspire municipalities and others to develop good urban spaces and urban networks; focus is on improving the existing urban structure - Visions and long-term goals

APPENDIX II

MANAGER SURVEY QUESTIONS

Organisation	How many organisational steps from political decision-making is your green-space unit placed?					
	Own unit	2. Level	3. Level	4. Level or more	Other	Don't know
	Are there any other employees with green expertise in the municipality who work with ...					
	Overview plans (e.g. municipal, detailed zoning)	Other plans (i.e. tree-register, rehabilitation plan)		Operation (and administration)	Operations (physical work outside)	
	How many full-time employees are working with other plans?					
	0-1	2 - 3	3-5	6-10	More than 10	None
	How many full-time operational employees does your municipality have? (Here we mean administration that belongs to operations)					
	0-1	2 - 3	3-5	6-10	More than 10	None
	How many full-time employees does the municipality have in the operation of green areas? (physical work outside, not including municipal enterprises)					
	0-1	2 - 3	3-5	6-10	More than 10	None
	Looking forward, the next three years (2018-2020), how do you think the number of space will change?					
	Increases considerably	Increases	No change	Reduces	Reduces considerably	Don't know
	Looking back, the last three years (2014-2016), how has the number of green space changed?					
	Increased considerably	Increased	No change	Reduced	Reduced considerably	Don't know
	Do you think that the number of visitors in the next three years (2018-2020) is going to ...					
Increase		No change		Decrease		
				Don't know		
Strategy	Has your municipality a written strategy for green space?					
	Yes		No		Don't know	
	Has your municipality strategic aims that are related to...					
	Public health	Inclusive design	Biodiversity	Sustainable development	Water management	Climate strategy
Quiet zones	Recreation	Aesthetic	Distance	Green space networks/ Connectivity	Outdoor Schooling	
					Other	
Funding	Can you estimate the municipality's total budget for the operation of all urban green space the municipality manages including city-trees in 2016?					
	Yes		No		Don't know	
	Looking back, the last three years (2014-2016), what do you think the change in operating budgets has been?					
	Increased		No change		Decreased	
					Don't know	
	Looking ahead, the next three years (2018-2020), how do you expect the changes in operating budgets for green space to be?					
	Increase		No change		Decrease	
					Don't know	
	Are new facilities followed up by increased assets?					
	Yes		No		Don't know	
Is your budget for operation sufficient to maintain quality in green space?						
Yes		No		Don't know		
Has your municipality estimated costs of neglected upkeep of green areas?						
Yes		No		Don't know		

Evaluation	Does your municipality measure or register green space visitor numbers?					
	Yes		No	Partially		Don't know
	Does your municipality measure or register green space visitors' satisfaction?					
	Yes		No	Partially		Don't know
	Has your municipality mapped and digitalized green spaces? (i.e. physical properties, ground registers)					
Yes		No	Partially		Don't know	
Partnerships	Do you work with private partners or organizations in maintaining green space?					
	Yes		No			Don't know
	Follow-up			Please specify with whom you are collaborating		
	Do you involve inhabitants in the re-planning or re-designing of green space?					
	Yes		No			Don't know
	Follow-up			How are the residents involved?		
	Information based	Invitations to meetings	Invitations to Cooperation	Taking parts of the responsibility	Changes are made after initiatives	Other
Maintenance	Who carries out your daily green space maintenance?					
	Own operations unit		Entrepreneur	Municipal business		Others
	The next three years - do you think this will change?					
	Yes		No			Don't know
	Do you use an overall system to measure quality green space?					
	Yes		No			Don't know
Follow-up			Please specify the system you use			
Quality	How do you value the quality of green space in your municipality today?					
	Good		Alright		Not so good	
	Looking ahead, the next three years (2018-2020), you think the quality of the areas will be ...					
	Improve		No change	Reduce	Don't know	
	Looking back, the last three years (2014-2016), has the quality of the municipality's green spaces changed?					
	Improved		No change	Reduced	Don't know	
	What do you consider to be the greatest threat to keeping quality in urban green space in your municipality?					
	No sufficient budget	Too much of my time goes to quality control of contracts		Undefined responsibility areas	Missing awareness of municipal politicians	Missing green competence

APPENDIX III

USER SURVEY QUESTIONS

Introductory text to the survey questions: The following questions are about green spaces. Green spaces are all public owned and accessible spaces with vegetation, such as parks, recreational areas, forest and natural areas, sportsgrounds, playgrounds and other spaces.

No	Questions					
1	How do you perceive the quality of green spaces in your municipality?					
	Very good	Good	Medium	Bad	Very bad	Don't know
2	Think about the green space in your municipality that you visited most between April and October: What kind of activities did you perform in that green space? (Multiple answers are possible)					
	Passing through		Walked the dog	Collected food (fruits, berries, mushrooms)		Played with children
	Visited/ took part in events		Met friends	Picnic		Running
	Cycling		Ball games	Other sport activities		Quietness
	Got fresh air		Relaxed	Got sun		Experienced nature
	Other activities		I do not visit green spaces (jump directly to question 5)			
3	How often did you visit that green space between April and October?					
	Daily	Several times per week		Weekly	Monthly	Less than monthly
4	How far from your home is this green space?					
	Less than 50 m	50-149m	150-299m	300-999m	1-5km	More than 5 km
	How do you perceive the quality of this green space?					
	Very good	Good	Medium	Bad	Very bad	Don't know

APPENDIX IV

INTERVIEW GUIDES:

PUBLIC ORGANISATION AND ORGANISED USER GROUPS & UNORGANISED USERS

PUBLIC ORGANISATION AND ORGANISED USER GROUPS

Dimension	Explanation	Guiding questions
Actor <i>Actors involved in this specific green place</i>	Green spaces are tintured through the presence of things, or persons or environmental constellations They are themselves spheres of the present of something, their reality in space (Böhme) How are agencies (human and non-human) bound up in relationships of affective (emotion/ feeling) exchange?	<ul style="list-style-type: none"> Where do you like to go in the space? Why are you coming here? Why are you engaging in this green space? Do you have a story from Øya you want to share? <hr/> <ul style="list-style-type: none"> When did you start working together and how did you start? How do you experience the collaboration? Does it create a better green space and how?
Resources	Relative power of the actor: <ul style="list-style-type: none"> knowledge, mobilisation of others Scrutinizing material and financial resources: <ul style="list-style-type: none"> Funding Tools and equipment 	<ul style="list-style-type: none"> What do you think about Øya, what is important for you? Do you feel you have the right resources to do your work? How is the communication between those involved in Øya? Hvordan argumenterer du for det grønne og hvordan mottas dette? Do you have the right competences? Has there been any conflicts, different interest and how has that ben handled? What does green space management mean for you?
Rules	Rules that shape the interactions between actors <ul style="list-style-type: none"> informal: procedures formal rules: organisation/ political culture 	<ul style="list-style-type: none"> Do you see possibilities to solve the problems at hand? Is there more to decision-making, a political choice? What are the challenges in managing/ collaborating to keep Øya?
Quality	Standards meeting/ exceeding expectations System that ensures quality?	<ul style="list-style-type: none"> What does quality mean for you? How do you think quality can be kept and why is that important?

UNORGANISED USERS

Dimension	Explanation	Guiding questions
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Actor: Users	Emotions Animals Plants Partnerships	<ul style="list-style-type: none">• Where do you like to go in the space and why?• Why are you using this space?• What is important for you?• Any stories you would like to share from Øya? Something you remember.• What is quality of space for you?• How can quality be kept?
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