NORDGREEN

Smart Planning for Healthy and Green Nordic Cities

Conceptual overview

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NORD GREEN

1. Introduction

The ambition of NORDGREEN is to generate practical, applicable and policy relevant knowledge on how to plan, design and manage urban greenspace in ways that support sustainable development and public health and wellbeing. The active involvement of six cities from four Nordic countries is crucial for this ambition, and so is the participation of researchers from different academic disciplines – epidemiology, environmental psychology, urban planning, human geography, GIS and landscape planning.

NORDGREEN is a research project that:

- includes six partner cities: Vilhelmina and Täby in Sweden; Ii and Espoo in Finland, Stavanger in Norway, and Aarhus in Denmark.
- includes four research institutions: Aalto university in Finland, Norwegian University of Life Sciences (NMBU) in Norway, the Swedish University of Agricultural Sciences (SLU) in Sweden and Nordregio which is a Nordic research institute based in Sweden.
- aims to support the six partner cities as Nordic best-practice examples.
- will develop and implement smart planning and management solutions based on environmental psychology, participatory GIS, epidemiological data and new governance approaches.
- will produce place-based planning and management practice guidelines, suggest recommendations for sustainable greenspace policy-making, and scientific knowledge for future research.
- is funded by NordForsk, an organization funded in 2005 by the Nordic Council of Minister with the purpose of strengthening Nordic collaboration in research.

The research field of greenspace and its relation to health and wellbeing is broad, and the purpose with this document is to provide a basis for a shared understanding across the work packages and amongst partners about which perspectives are at the core of the project. What do we mean when we talk about (urban) greenspaces and their benefits for health and wellbeing in the context of NORDGREEN?

Section 2 explains the method for making the conceptual overview and summarizes the findings. Section 3 contains short overviews of the participating partner cities. For city-partners, the conceptual overview can serve as a reference for the project's thematic framework. It provides a glimpse of the research partners' areas of expertise and revolves around key terminology in the project[1].

1 For the overall description of project results and goals, see the proposal/research plan.

For both city-partners and research partners, the city overview is useful to get a brief understanding about key characteristics of the city-partners concerning the topics on the agenda that they bring to the project.

The variation of actors included in the consortium brings many opportunities to the research project. It also motivates a process where the project terminology is discussed at an early stage. This project focus on societally relevant problems including partners outside of academia to define problems and solutions. The project facilitates learning processes between various research disciplines and municipalities and it aims for knowledge that will be applicable in scientific and societal practice.

An approach where we continuously make sure that the different actors understand each other and where differences and commonalities are highlighted, facilitates the research process and gives a good basis for creating research results that are applicable to various local contexts (see e.g. Lang et al. 2012; Sallis et al. 2016). The fact that the project is conducted in English while the local languages are Norwegian, Swedish, Danish and Finnish, is an additional motivation to make sure partners understand each other during the course of the project. Such approach will contribute to societal relevance of the research and enhanced and sustained project impact.

2. Conceptual overview

The links and evidence between greenspace and health have been discussed in a range of publications (see e.g. Hartig et al., 2014, WHO Regional Office for Europe, 2016, Nilsson et al., forthcoming) - so how did we arrive at the concepts discussed in the concept overview? The literature was selected by the research partners during spring 2020, as each WP-team were asked to share ten articles they found to be most relevant for NORDGREEN. Nordregio went through around 20 of the articles and added grey literature from sources such as the World Health Organization, connecting the project to a global context.

The following questions anchor the literature analysis and structure the content of chapter 2:

1. What concepts are used to describe **(urban) greenspace** in the literature and how are these defined. Also, what **types of urban greenspace** is studied or discussed in the literature?
2. How does the literature relate to **quality of greenspace**?
3. What **dimensions of health and wellbeing** do the articles focus on?
4. How is **Governance and planning** discussed in the articles (including **public participation and management**). As well as: how does the literature relate to the concept of **'smart cities'**?
5. How is the **greenspace-health nexus** in the urban context captured in the literature?

2.1 Definitions and types of greenspace

There is no universally accepted definition of greenspace (Fongar et al., 2019), and there is some critique that the type and use of greenspace that is measured in the research is often not sufficiently described (Twohig-Bennet and Jones, 2018), which can make it difficult for users of the research to know exactly what is studied.

Previous research has used various definitions and there is a variation regarding to what extent vegetation is included. Apart for the presence of vegetation, accessibility and opportunity for recreation are also important aspects in the definitions we found. Twohig-Bennet and Jones (2018) concludes in a systematic review that greenspace often is "defined as open, undeveloped land with natural vegetation" (Twohig-Bennet and Jones, 2018:628). However, undeveloped land can be difficult to find in this anthopocenic era.

Aspects relating to accessibility, such as usage from "within", and free access are important in the following two definitions:

"[...] spaces that are publicly owned, where management is responsibility of the local authority, access is free for all and some type of recreational amenity is available" (Fongar et al., 2019:2).

"All publicly owned and publicly accessible open space with a high degree of cover by vegetation, e.g. parks, woodlands, nature areas and other GS. It can have a designed or planned character as well as a more natural character. Only areas that can be entered and used from 'within' are included." (Schipperijn et al., 2010:26).

While the first definition does not explicitly mention natural values in the definition, this is emphasized in the second definition. In their study, Fongar et al. (2019), however, uses a classification of seven types of greenspace: recreational areas; spaces along waterways; parks; natural areas; graveyards; school playgrounds; and trees, which illustrates clearly what type of greenspace is included in the study.

Some studies go beyond greenspace. Jansson et al. (2019) studies urban open space and includes both vegetation-dominated greenspace like parks, street streets and playgrounds, and hard-paved open spaces like squares, pedestrian streets, and piers. Here as well, the accessibility for the public is a crucial aspect. Recreational areas are another concept that can be used to widen the study object a bit and can encompass "greenspace, exercise and recreational areas" Kajosaari et al. (2019).

One research stream adds concepts that relates to wilderness and suggests creating more space for wild nature and less manicured urban greenspace (Randrup et al. 2020).

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In the NORDGREEN project proposal, two additional concepts that were not found in the scientific articles were included: inclusive greenspace and multifunctional greenspace. This shows the normative focus of the NORDGREEN project and promotes the aspects of equity – everyones' equal opportunities to relation to accessing greenspace, in the proposal expressed as "inclusive greenspace", as well as the understanding that greenspace in densifying cities should not all offer single functions but multiple, addressing various human needs at once.

Relevance to NORDGREEN

Definitions of greenspace and related concepts will be a central research area to all the work packages in NORDGREEN. To capture all the different types of spaces that are studied in NORDGREEN, a greenspace concept for NORDGREEN was developed:

> Publicly accessible urban and peri-urban spaces with vegetation cover, as well as other urban open spaces

This concept highlights the accessibility aspect of the studied spaces and it includes spaces can have an urban or not so urban character, as well as being covered by vegetation. In addition, the concept includes mere open space that is not necessarily green. The reason for this is that spaces like squares, sidewalks and bike paths might not be green, but they can support physical activity, social interaction and other activities that impact on human health and wellbeing. During the kick-off for NORDGREEN, on 24 September 2020, Aalto university added the perspective that spaces that are used daily by the urban population, such as e.g. hubs for public transport, could impact negatively on wellbeing due to their stressful character, and studying open spaces with negative impact on health can therefor also be of high relevance.

With inspiration from the overview, the following questions can be of relevance to NORDGREEN:

- Which vocabulary in local language is used in the partner cities?
- How do city-partners define greenspace in their municipalities?
- Are different kinds of greenspace included in separate strategies in the partner-cities?

2.2 Quality of greenspace

Seeking to understanding the ways in which greenspace are linked to health, much research has focused on a range of characteristics that determine the quality of greenspace as well as possible indicators for greenspace usage in improving positive health outcomes, but also possible contributors to a range of adverse effects. A range of methodologies have been explored in terms of quality assessment, many of which include access or usage as a key factor/indicator.

Grahn and Stigsdotter (2010) has contended that we seldom learn about the quality of urban greenspace. The quality-discussion has for a long time evolved with the densification of cities, where measurable criteria has changed from 'shape, color, scale, texture' in the 1960s to today's 'size topography, distance, color' (Grahn and Stigsdotter, 2010). Yet, knowledge on how we understand greenspace quality is important as we are quantitatively and qualitatively firmly establishing the linkages of health and restorative effects on people. Associated with qualities in greenspace are also recreational attributes, qualities associated with historical and cultural associations, spaciousness, richness of natural species, peaceful qualities and wildness (Grahn and Stigsdotter, 2010). The authors present eight perceived sensory dimensions in greenspace that are directly connected to what qualitative effect a greenspace has for people. These are introduced in section 2.5 in this document.

A WHO report from 2016 cites a qualitative analysis by McCormack et al. (2010), noting that, "attributes of greenspaces, such as safety, aesthetics, amenities, maintenance and proximity to home, are important for supporting physical activity outdoors. Aspects such as concerns over safety, violence, graffiti, vandalism, litter, noise, pollution, and dog fouling had negative associations with park use and physical activity." (WHO, 2017:14).

Further, greenspace quality has been associated with (mental) health outcomes independently of the greenspace quantity (Putra et al., 2020). Similarly, it was shown that the quality of public open spaces (including parks and gardens) in the neighbourhood is more relevant to mental health, than their quantity (Francis et al., 2012). In addition, the qualities of greenspace in terms of allowing relaxation and recreation have been described as important factors in improving mental well-being (Pope et al., 2015). It is not clear from these studies, however, what aspects could have a negative impact on health outcomes when it comes to assessing quality vs. quantity. As such, the question of 'what aspects or characteristics of greenspace might influence the use of greenspace (Putra et al., 2020: 16) is yet to be comprehensively explored. It is likely that individuals might not use greenspace if it is not well-maintained, physically attractive, or generally of poor quality (Putra et al. 2020). Therefore, the quality of greenspace might be an important aspect that should be considered in understanding the potential benefits of green on human health.

To summarise, some aspects that can be used to determine quality of greenspace:

- **Measurable design criteria:** Shape. Color. Size. Topography. Distance.
- **Recreational attributes:** History. Culture. Biodiversity. Peaceful. Eight perceived sensory dimensions.
- **Maintenance:** Safety. Amenities/ Service. Attractivity.
- **Negative association with park use:** Litter. Noise. Pollution. Vandalism. Violence.

Given the general trends for 'compact' city development in the Nordic countries, questions have emerged regarding whether densification of the built environment has come at the expense of access to existing green structures and spaces in urban areas. Using grid-level statistics, Stjernberg and Penje (2019), indicates that densification is also occurring in shrinking municipalities, compromising the urban greenspace access in these contexts as well. In analysing and comparing national-level policy and legislation, the report turns attention to 'green values' and urban green areas. The report's framework will be useful to NORD-GREEN project partners in identifying how these so-called 'green' policies – be they spatial or socio-economic - are implemented and operationalized at regional and local levels.

Fongar et al. (2019), draws connections of greenspace quality to the management, stating that the value of long-term management is underestimated in the Nordic countries. Their study points to examples where

quality can be affected by an increase in tasks for greenspace managers, or in the case of an increased number of visitors. In general, it is evident that more spaces to manage can generate more work per person, which makes it difficult to maintain the same quality – which in this context is understood as an 'abstracted concept', i.e. both descriptive and perceptive. Yet, local authorities responsible for the management of greenspace tend to define and measure quality based on their own evaluations, where 75% of municipalities do not have a system (or employ the same system) to measure greenspace quality. As Petra et al. citing Hur et al., 2010 notes, "GIS analyses often do not take into account the appraisal of laypeople (e.g. residents) of their environment." It is likely that local people "know more about their environment and more qualified to assess greenspace quality. Since they have day-to-day experiences and live in the neighbourhood, their perceptions of nearby greenspace are likely to be consequential for successful policymaking." (Ibid: 16). Such approach supports giving space for public participation in planning and design of greenspace.

To this end, comprehensive and cross-departmental evaluations are important tools to employ in grasping placed-based perceptions of greenspace quality and the links with (the determinants of) accessibility.

Relevance to NORDGREEN

Research is needed to link different qualities of greenspace to health benefits, especially for larger segments of the population in the Nordic region, both in highly densified and in rural areas.

The project will develop the evidence for the links between the characteristics of urban greenspace and impacts on health outcomes by:

(i) mapping health indicators on aggregated level in each of the partner cities

(ii) establishing suitable indicators for measuring health impacts in the municipalities

(iii) mapping of greenspace characteristics

(iv) integration of health and greenspace indicators in the baseline monitoring and assessment.

(v) in-depth case-studies in a few municipalities for establishing links between greenspace qualities and health and wellbeing outcomes.

The empirical work will take place in WP1 and will result in assessments of qualities and challenges regarding healthy greenspace in each city-partner area.

2.3 Dimensions of health and well-being

Health and well-being in the Nordic context are often understood as the promotion of public health in a general 'whole-systems approach' sense rather than focusing on disease prevention. For instance, the Nordic Health Promotion Research Network (NHPRN) has since 1996 organised the Nordic Health Promotion Research Conferences (NHPRC). The Nordic countries are often among the top countries in international wellbeing and quality-of-life-related comparisons (Kokko et al., 2018).

For the purposes of this NORDGREEN concept overview, we merely aim to address some key health and well-being factors in relation to greenspace. From a broader urban and qualitative perspective, we often observe the general health attributes of greenspace; however, the ways in which (urban) greenspace affects 'health' are many. This ranges from physically, spiritual, emotional, philosophical well-being as a result of spending time in nature, to recognizing how greenspace can mitigate the negative trends and threats of climate change and non-communicable diseases (NCDs). The relation of health and well-being is summarized in Figure 2 in section 2.5.

In reviewing the selection of literature, it has been scientifically established that time in spent in nature and greenspace (incl. exposure to daylight) shows positive correlations to mental health benefits, such reduced depression and anxiety; lowering of stress levels and better coping capacity, as well as positive impact on sleep. Conversely, research indicates that lack of access to greenspace also suggests premature death and other physical health aspects. However, more recent work stresses the need for looking into different effects on social groups (see e.g. Nilsson et al., forthcoming). In line with this statement, Kokko et al. (2018) emphasizes that the determinants of health are interlinked with socio-ecological factors in the different environments in which people live their lives and that NCDs are lifestyle related.

Research at the Nordic Welfare Centre has looked at health equity and how the socio-economic differences in health have increased more in the Nordic countries than in other parts of Western and Southern Europe (see e.g. 'Health Equity in the Nordic Region, 2018). It brings us back to earlier mentioning of management as having direct impact on health and wellbeing via greenspaces, stating that poor maintenance can even have negative impact on health.

It can be challenging to use objective health parameters to document the impact of greenspace interventions on health and well-being. Giles-Corti et al., (2016) draw on the WHO framework, which recommends placing health and equity at the heart of (city) governance and planning, highlighting the need for integrated urban planning." Randrup et al (2020) similarly argues that "Urban greenspace should not only be seen as something that offers solutions, but have intrinsic value."

Relevance to NORDGREEN

As health is affected by a wide range of factors, complex methods and various research are required to assess and monitor the health impact of urban greenspace actions. By examining the health-greenspace nexus through the lens of environmental psychology and epidemiological research in NORDGREEN, the knowledge base for public health strategies and policies on greenspace planning, management and design in the cities will be strengthened.

NORDGREEN aims to develop data and indicators for monitoring health in relation to greenspace characteristics (e.g. size, functions, noise etc) in work package 1. We seek to provide evidence on how human health and wellbeing is affected by innovative planning, design and management initiatives. NORDGREEN also has the ambition to establish innovative monitoring systems that can measure benefits created by smart solutions in terms of health and wellbeing.

2.4 Governance, planning and smart city

Public participation can be seen as an integrated aspect of governance, planning and management, but there are different ways to approach it. Two main approaches in relation to greenspace emerges in the reading. The first concerns the engagement of communities and individuals in the practical management of greenspace. The second concerns how public consultation processes can be democratized via broader involvement of a more diverse and representative group of participants.

The literature brings up a variety of unconventional ways to approach management of greenspace. Randrup et al. (2020) introduces the concept of nature-based thinking as a means to balance an anthropocentric and instrumental approach to nature. While concepts like eco-system services and nature-based solutions looks at nature as something that can solve problems (that often are created by humans), nature-based thinking emphasizes spiritual and philosophical relations to nature and intrinsic values, meaning that nature has a value in itself. In this thinking, ecological, community and governance systems are intertwined, and community participation is seen as a way to contrast expert-driven problem formulations and to reconnect people with nature.

Fongar et al. (2019) argues that it is becoming more important to involve private and voluntary sectors and individuals in greenspace management. The authors give example of different types of partnerships consisting of groups like sports organizations; garden associations, and cultural heritage associations that engage in management. Jansson et al. (2019) studies new tendencies in co- and self-management, looking e.g. at collective management of resources, emphasizing that the social relation to the common is important in these cases when people become more active in taking care of the environment.

Another stream in the literature looks to the influence of national policy on greenspace management and emphasizes the connection between policy and funding (Nam & Dempsey, 2019).

Nam & Dempsey (2019) highlights that links between positive health benefits and the use of greenspace are based on assumptions that greenspace is well-managed and maintained.

Schipperijn et al. (2010) argues that individuals have different preferences in the use of greenspace, and therefore planners need to obtain local knowledge about the users in each specific case of planning and designing changes of a greenspace. Kahili-Tani et al. (2019), however, acknowledges the difficulty of translating and integrating local knowledge into the formal planning process. The authors identify three main challenges that participatory GIS (PPGIS) has the ability to address in participatory planning; 1) finding methods for planners to effectively arrange participatory planning; 2) read broad groups of participants; 3) gain high quality data (knowledge) and apply it in planning.

Simply put, PPGIS help planners to gather a large amount of data via digital means from individuals to increase local knowledge about specific places. Kahila-Tani et al (2019) argues that PPGIS has the potential to turn private judgement into public judgement, by aggregating large amount of data from individuals. The authors further argue that PPGIS can create effective and fair planning with more representative participation, or at least avoiding elitist participation from small groups.

In sum, there are a large variety of concepts that illustrate different aspects and focus in the study and practice of participation, seer table 1.

While the literature does not refer to smart city, the usage of the term has in recent years aimed to capture how traditional networks and services can be made more efficient with the use of digital and telecommunication technologies for the benefit of its inhabitants and local development. This also means a more interactive and responsive city administration to enable novel solutions to meet the demands of a climate responsive future.

The application of the term within the context of NORDGREEN is to emphasize smart solutions for policy development - centering people first - in the whole Nordic region. In short, it is the partner cities using technological solutions - where and if possible - to improve the management and efficiency of the urban environment. Importantly, every city or municipality is different, with different challenges and opportunities. For cities to become 'smart' they must embrace their unique context. Technology is therefore an enabler, not the solution.

This is reflected in the cross-cutting nature of the project's research, which require multi-disciplinary knowledge and methods, such as PPGIS, as well as cross-sectoral approaches and aims to stimulate cooperation between researchers and cities, to achieve po-sitive health out-comes of greenspace planning. Increased smart Nordic collaboration, researcher mobility, and cross-sectoral collaboration/ co-creation will strengthen the potential for evidence-informed policymaking re-garding the planning and implementation of greenspace in NORDGREEN.

Nature-based thinking	Place-based governance
Nature-based solutions	Inclusive & participatory decision making
Place-making	Comprehensive citizen engagement
Place-keeping	Co-production
Commons	Community involvement
Communing	Participatory GIS
Co-management zones	Individual vs collective participation
Self-governance	Top-down participation
Co-governance/co-creation	Bottom-up participation
Hierarchical governance	Self-organized participation
	Volunteering

Table 1. This selection of concepts relating to governance of and public participation in greenspace planning and management illustrates that there is a big variation in perspectives and practices on these matters in the selecteds literature.

Relevance to NORDGREEN

The NORDGREEN research project aims to develop ways to integrate the information from citizen engagement into the planning process in meaningful ways. WP2 will contribute with methods that can be used in the cities to collect large amount of qualitative data from citizens, as well as advising the municipalities in how to make use of results from participatory processes in their planning. WP3 will make an overview of greenspace policies in the municipalities which can shed light on the governance structures. How the governance systems of greenspace look like, will be further studied in two municipalities. The smart-city framework encourages a focus on citizen wellbeing, particularly on aspects related to knowledge-driven and innovative governance and decision making.

The following questions is relevant to consider in NORDGREEN at this stage:

- What type of public participation is used in planning and management in the partner-cities currently? (Consultation by gathering local information? In practical management of greenspace? Something else?)
- In which way is the 'smart city' concept relevant in the partner-cities and what does it add to the planning and management practice?

2.5 The greenspace, health and well-being nexus that emerges

The research field that explores the connections between exposure to greenspace and positive effects on health and wellbeing is a vast one. Still, the literature calls for more evidence of the greenspace-health and wellbeing nexus. In short, four types of health and wellbeing aspects are explored in the literature and are represented in figure 1) Physical health is often related to symptoms caused by stress and/or physical activity such as cardiovascular diseases, muscular pain. 2) Mental health symptoms such as fatigue, depression, feelings of stress, also often related to stress and/or (insufficient) physical activity. 3) Social wellbeing aspects like quality of life, opportunities for recreation, connection with nature, and participation in society via e.g. public participation. 4) Health (in)equity which relates to everybody's access to high-quality greenspace.

Broadly speaking, the literature reflects that accessibility, management and quality of greenspace is a driver for positive health outcomes. Capturing what has been noted in several recent studies, Nilsson et. al. (2019) observes that, "If a piece of land is in healthy condition it can offer social, economic, business, environmental and cultural benefits simultaneously." But who is responsible this? Research has looked at the role of management and governance

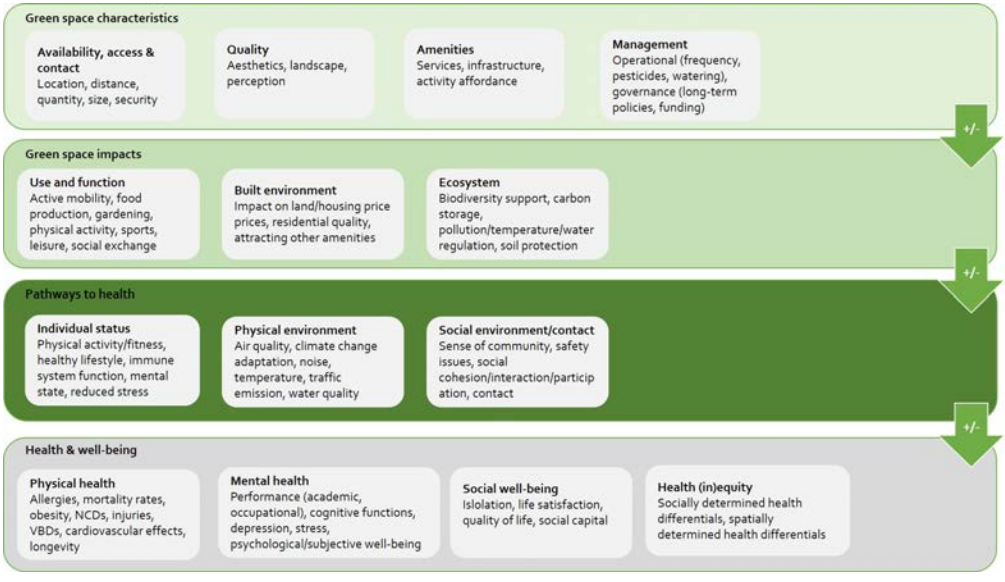

Figure 1. The figure is a representation of how greenspace links to human health and wellbeing. The figure is adapted from Hartig et al., 2014, and WHO Regional Office for Europe, 2016.

in determining greenspace quality and maintenance thereof. For instance, Nam and Dempsey (2019), in charting the challenges for urban park management in practice, argue that the maintenance of greenspace is directly connected to policy and funding.

Getting into what type of greenspace qualities bring what type of effect on human beings, Grahn & Stigsdotter (2010) identified eight perceived sensory dimensions of urban parks or urban open spaces: Serene, Space, Nature, Rich in Species, Refuge, Culture, Prospect and Social. Among these, the dimensions Refuge and Nature were strongly and negatively correlated with stress. Refuge was defined as a place surrounded by bushes and higher vegetation where people feel safe, play and can observe other people being active; Nature was defined by the feeling of "being in nature". Access to the Serene dimension has been associated with a significantly decreased risk of mental illness in women (Annerstedt et al., 2016; Van den Bosch et al., 2015). Serene has been previously defined by Grahn & Stigsdotter (2010) as "a holy and safe place, which is a calm environment, undisturbed and silent" (p. 271). The wilderness discourse noted in chapter 2.1 is connected to a greenspace-health and wellbeing nexus that emphasizes the positive effects of reconnecting urban populations with nature in a more spiritual way.

WHO summarises evidence of health benefits and pathways to health, and evaluates health-relevant indicators of urban greenspace. The work was published 2016 in a report in response to the lack of knowledge on the most effective ways to deliver urban interventions on greenspaces. Local experiences and urban practice suggest that multidisciplinary planning, cross-sectoral collaborations, and community engagement in the planning process are essential (WHO, 2016).

Here, we shortly list the most relevant formulations in are four international frameworks that specifically address the link between urban greenspace and health (WHO, Europe 2017).

- The Parma Declaration commits by 2020 "to provide each child with access [...] to greenspaces in which to play and undertake physical activity".
- The New Urban Agenda underlines the importance of public space. It calls for an increase in safe, inclusive, accessible, green and quality public spaces: "promotion of safe, inclusive, accessible, green and quality public spaces [...] garden and parks [...] that are designed and managed to ensure human development and build peaceful, inclusive and participatory cities"
- The 2030 Agenda for Sustainable Development, which pledges to "leave no one behind", sets the target in Sustainable Development Goal 11 (target 11.7) to "provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities". SDGs 3, 15 and 13 are also pertinent to the green-space health nexus.
- The topic of urban greenspace is also embedded in the priority area "creating resilient communities and supportive environments," as part of the WHO Europe Health 2020 policy framework.

Figure 2. Goal 3, 11, 13 and 15 in the 2030 Agenda for Sustainable Development.

Relevance to NORDGREEN

NORDGREEN examines the health-greenspace nexus with the help of environmental psychology and epidemiology data in order to strengthen the knowledge base for public health strategies and policies on greenspace planning, management and design. More research is needed on large population segments for evidence on the role of access and exposure to natural environments for mental and cognitive health, and more research is needed on quality and the relation to health and wellbeing.

NORDGREEN will:

- Identify physical, social and economic barriers to the use of, and exposure to, greenspace.
- Support smart planning and management solutions for well-distributed high-quality urban greenspace as potential spaces of integration in Nordic cities.
- Enable the research partners to support, and develop tools for, integrated planning and management with a strong expert knowledge-base and citizen perspectives on health, wellbeing and greenspace.

3. Shared approaches amongst city-partners

In this city-partner overview we have summarized agenda topics in the city-partner municipalities. The topics have been brought up in dialogue between the partner cities, Nordregio and SLU (WP3). The presentation of the city interests has been revised after the kick-off in September 2020, since this meeting gave further insight in what type of research is possible to carry out in the cities.

The city-partner overview also shows which topics can be of interest for the city-partners to exchange information about. As seen in the map (Figure 5), the municipalities have different geographic contexts concerning size, population and localization in the Nordic region. Despite the contextual differences of the municipalities, they share many challenges and opportunities.

The common interests of city-partners are illustrated in Figure 3 below, which summarizes projects that have been highlighted as important in the context of NORDGREEN. The projects themes have been divided into four categories, the two on top being strategic in their nature, and the two on bottom being place-based. While the two categories on the left rely on inputs to ongoing planning processes, the two on the right concern either the evaluation or the implementation of already finalized plans, strategies, or other spatial development projects.

Figure 4. The figure shows a summary of the projects that the city partners have highlighted divided into four categories, showing shared topics of interest for the city partners.

Various issues in the municipalities relate to governance structures of greenspace planning, and the interlinkages between policies and strategies. WP3 focusing on governance and management could make contributions to several of the issues stated in the following. Central questions for Espoo in the development of their comprehensive plan are: 'how do we balance green areas with built areas as Espoo's population is growing and the city is developing?' and 'how do we sustain/plan for biodiversity and the natural environment?'. The same goes for Ii, as the municipality is developing a new comprehensive plan and need to handle strategic related issues.

Täby is about to finalize the work with a new comprehensive plan and a green plan, which will feed into the comprehensive plan. It focuses on nature, recreation and culture and has a health promoting approach. A participatory process was carried out and currently there is ongoing work to ensure the results have been sufficiently represented in the plan. The process of producing a green plan has highlighted the need for clarity regarding the hierarchy between existing strategies and policies. Similarly, Aarhus is working with an overarching green strategy called A Greener Aarhus. The strategy is a new approach and emphasizes cohesion with several strategic policies in the municipality such the mobility plan, health policy and equity strategy as well as the existing climate strategy. The green perspective is at the basis for the overarching strategy which is closely linked to the health perspective. It is to be finished late 2020 and awakens questions such as "How does a municipality succeed with implementation of integrated planning? What are the challenges and how to overcome them?".

> "Despite the contextual differences of the municipalities, they share many challenges and opportunities.

The implementation of the green comprehensive plan in Vilhelmina is also on the agenda. It was produced in collaboration with SLU and Umeå University and included participatory processes using focus groups. To implementing the green comprehensive plan is a continuous work that can be challenging in Vilhelmina duet to the fact that there is no appointed person responsible for comprehensive planning. It raises questions such as "How to make sure that the strategies and visions in the green comprehensive plan are followed in future planning and development of the municipality?" and "How can this work be systematized?".

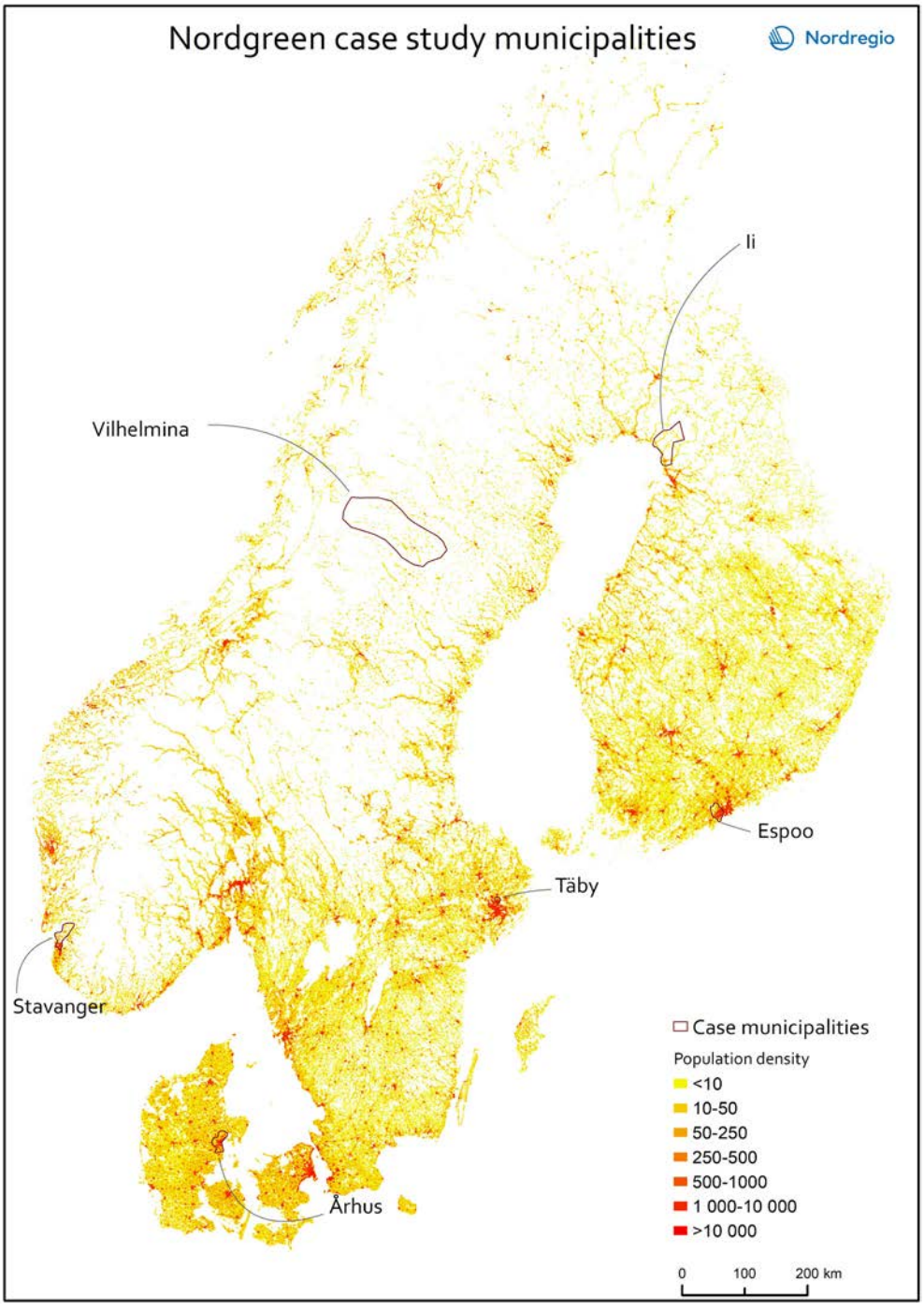

Figure 4. The map shows the city-partners that participate in NORDGREEN and the population density in the municipalities. The map illustrates some factors making up the different contexts of the municipalities. Sources: SCB, DST, SSB, Statistics Finland and Stavanger municipality. Map by: Oskar Penje, Nordregio.

The context of the city has changed a lot since the municipal merger, and the city now administers much more area than in the past. This will affect how greenspace is defined and measured. As part of the overall municipal plan, Stavanger has also developed a targeted green plan, which compliments the city's spatial plan. This plan is scheduled to be approved by end of 2020. As for Stavanger, blue space is also to be considered as health promoting.

The cities also have an interest in indicators to be able to measure health and wellbeing impacts, from strategic planning as well as from specific playgrounds and parks. WP1 is overviewing indicators related to health and wellbeing as well as to greenspace qualities and will be of great value in this regard. Relevant indicators could be used by the municipalities in the development of new parks, as well as in impact assessments of existing or newly constructed greenspace. Indicators would help the cities to develop tools for independent and continuous learning. For Ii, the development of Iijoki riverside green and the town central areas are high priority.

The participatory GIS method in WP2 will bring value to the ongoing development in the municipalities in various aspects, both supporting with the collection of useful data and with the integration of results from participatory processes in planning of greenspace.

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ANNEX 1. CITY PARTNER OVERVIEW – short facts

	Stavanger**	Täby*	Vilhelmina*	Espoo**	Ii****	Aarhus*
Population 2019	143 691	71 874	6 668	289,731	9889	350 000
Area (km2)	262	60	8,048	528	2,872	468
Population density km2 2019	559	1 184	0,8	928 km^2 (based on residents on land and not incl. water area)	6.4	2 824
Population change 2019	- 149	+477	-84	-	-	+4 651
Foreign born 2019	(7%)	(18%)	(8%)	11.6% (other nationalities)	-	(13%)
Greenspace area* **	62,4%	63,7% *****	99,3 % *****	-	-	71%
Residents in urban area	93%	99,5 %	52 %	-	-	97%

Table 2. The table shows basic statistics about the city-partners in NORDGREEN. Swedish statistics from SCB (2019). Danish Statistics from DST (2019). Norwegian statistics from SSB (2020). Finnish statistics from Statistics Finland and the municipalities (2019).

*2019
**2020
***This measure is made differently in the different countries. At this point the numbers just give an approximate indication on the different percentage of greenspace in the municipalities in the project. There is a possibility within NORDGREEN to find a comparable measure for accessible greenspace across the municipalities.
****2018
*****2015

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