Til mannréttinda-, nýsköpunar- og lýðræðisráðs
Ráðhúsi Reykjavíkur

Efni: The Nordic Smart City Roadmap.

Kynnt er skýrslan The Nordic Smart City Roadmap en Miðstöð hönnunar og arkitektúrs er fulltrúi Reykjavíkurborgar í starfshópi er vinnur að þessari samnorrænu stefnumótun sem styrkt er af Norrænu ráðherranefndinni.

F.h. Þjónustu- og nýsköpunarsviðs,

Óskar J. Sandholt,
sviðsstjóri

Hjálagt: Skýrsla The Nordic Smart City Roadmap ÞON21050015

The Nordic Smart City Roadmap

Contents

The challenge

To leave this world in better shape for the next generations, we must change our thinking about how we govern and evolve our cities and municipalities. We need a more holistic approach that acknowledges the complexity of tackling societal challenges. Technology can only take us so far. Social values, citizen involvement and trust need to play much stronger roles in the process of managing this change.

Every day we face societal dilemmas in our habitats that cannot be solved without more care for the environment and more attention to the social impact of our actions. The ultimate challenge is to transform the elements in our societies that are unequal, linear, polluting, unsafe and resource-demanding, into societies that are liveable, dynamic, inclusive, green and resilient.

This challenge cannot be solved within geographical, political or cultural silos. The Nordic countries acknowledge the need for cross-sector, cross-boundary collaboration to build on the best ideas and achievements from around the world.

Through such a boundaryless exchange of concepts and experiences, we can create new market opportunities for companies, new areas of research and development, and – ultimately – better communities for people to live in, today and for the future.

The purpose

With this joint Nordic Smart City Roadmap we want to promote principles – conceptual, ethical and political guidelines – that honour a more human-centric, inclusive and collaborative approach to developing smarter and more sustainable communities.

We believe it can serve as a framework for smart city work in cities and municipalities both in the Nordics and internationally. Our ambition is to demonstrate practical ways of applying the principles of the Nordic Smart City Roadmap - to overcome the barriers and develop sound solutions that benefit cities and municipalities, the business community and, ultimately, the citizens.

Why the Nordics?

The Nordic Smart City Roadmap is based on common Nordic values: a strong sense of trust, commitment to the common good, sustainable living, equality, collaboration and co-creation, openness and inclusion.

With these values as building blocks, our ambition is for Nordic cities and municipalities to act as drivers and facilitators for collaborative processes, employing new technologies whilst at the same time empowering, protecting and putting forward the interests of the inhabitants.

Target groups

To be able to solve societal challenges and come up with novel solutions that will benefit both the citizens and the habitats in which they live, we are addressing two main target groups:

- Local and regional authorities
- Solution providers

Local governments and municipal administrations are usually well connected to the fabric of their local communities and know what challenges are the most pressing. But to find new and innovative solutions to these challenges, we also need to bring onboard forward-thinking business leaders, investors and start-ups who understand both the need for interdisciplinarity in meeting public and civic needs, and the potential for scaling and exporting solutions to other cities and municipalities. We aim to bring these target groups together, facilitating two-way dialogue where both demand and supply are represented.

Still smart after all these years?

Over the past decades, the term 'smart city' has been used as a catch-all for various city development initiatives and concepts. Private companies have largely been at the forefront of smart development on a global basis, while public organizations, municipalities and cities have struggled with limited resources. Technology has been central, while understanding the needs of residents and improving their quality of life has been only a secondary goal.

Today a smart city is often described as an urban area that has become more efficient and/or more environmentally friendly and/or more socially inclusive using digital technologies.

In the Nordic Smart City Roadmap, we continue to use the term 'smart city' to describe our joint Nordic efforts to develop more robust and inclusive communities. But we aim to change the perspective from a largely centralized, technology-driven, top-down approach with a narrow focus on large cities and their typical urban issues, to a more collaborative approach where inhabitants (citizens, townsmen, villagers, rural people) as well as businesses, the voluntary sector and academia are invited to take part in solving dilemmas and overcoming barriers. Hence, in the Nordic Smart City Roadmap, technology is an enabler (as well as transformative) for addressing diverse individual and societal needs. But the real game-changer is collaboration and co-creation.

What's in it for you?

In the Nordic Smart City Roadmap, we aim to show how a more holistic and people-centred perspective on what constitutes a smart and sustainable society can contribute to concrete and positive impacts. Hence, the roadmap is designed to have several areas of utilization:

Guidebook. Describing the positive societal effects of smart city initiatives and identifying key principles, barriers and opportunities. Proving that the triple target of improving quality of life for all, empowering our citizens and reducing our environmental footprint can lead to innovative new collaborations – and win-win-win solutions for citizens, businesses and the planet.

Bridge Builder. Defining smart cities and communities in a Nordic context and using this definition to establish a common language and a shared set of values that promote collaboration and co-creation across borders, sectors, professions, levels and, in particular, together with the citizens.

Value Creator. Providing Nordic cities and municipalities with a good starting point and a solid framework for developing their own smart city strategy. Aiming to contribute to renewal and innovation in the public sector, the Nordic Smart City Roadmap describes the link between smart cities and local development – demonstrating how local and regional authorities can be the driving force behind this transformation.

Platform. Positioning the Nordics as a unified force in the smart city landscape, the Nordic Smart City Roadmap will serve as a communication platform for innovative, multidisciplinary Nordic companies, ecosystems and solutions that can be scaled and applied in other parts of the world. Inspiring cities and municipalities outside the Nordics to adhere to the principles of this roadmap – laying the foundation for increased cooperation across regional and national borders.

Our approach

In order to find innovative solutions to pressing societal challenges, the Nordic Smart City Roadmap advocates the following approach:

WHAT? → Our joint perspective

WHERE? → Action Areas

HOW? → Barriers to overcome
Principles to adhere to Solutions that can be scaled and disseminated

Our perspective

The main objective of the Nordic Smart City Roadmap is to deal with central dilemmas that communities face when striving to become better places to live, work and visit:

---

1) Machine vs. Human

Technological progress has created a situation of severe tension and incompatibility between the right to privacy and the extensive data pooling on which the digital economy is based. This development requires new thinking about the substance of that right to privacy.

Against the clear advantages of technological progress, commercial convenience and even law enforcement, we must weigh the chilling effect on curiosity, on trust, on creativity, on intimate activity, and on the ability to think outside the box — which is the critical spark to innovation.

Privacy has become our most basic right and must be protected. Without individual privacy there is no meaning to an individual's life, and without privacy, democracy loses all meaning.

We will strive to make society as a whole benefit from digitalization and new technology without compromising the individual's right to privacy.

2) Cities vs. Countryside

We also need visionary views on the future of work and life in rural areas. This has long been forgotten in the smart city debate, as the (bigger) cities have received most of the attention and most of the resources. The risk is that the countryside will soon become only a nostalgic example of rural history that tells where we come from, but not what we will become.

Given the negative sides of urbanization – as experienced recently with the Covid-19 pandemic – we need to discuss mobility and flexibility. Can we have access to the necessary services independent of where we live? Can new technology erase some of the traditional boundaries between cities and the more rural and remote areas?

Smart cities are no smarter than their weakest link. We will work to include all cities and communities – urban and rural – when realizing the Nordic Smart City Roadmap.

3) Local and Small-scale vs. Export and Globalisation

Increasingly, cities and communities must be seen as a multi-layered structure of services and infrastructures aimed ultimately at helping citizens to live and work with high standards of living while also reducing their environmental footprint.

New types of collaboration and partnerships are necessary to increase the rollout, expansion and replication of smart city solutions. But testing, developing and dissemination of new innovations to transform the landscape and life nerves of cities is undoubtedly a complex task.

With a joint Nordic Smart City Roadmap we aim to present a more holistic and people-centred perspective on how societal challenges can be addressed and solved – with the assistance of solution providers who see business opportunities in developing products and services that can be scaled up to solve similar challenges in other parts of the world.

Nordic cities score high in smart city rankings, but their level of export and dissemination can be improved. Our goal is to help scale up and facilitate the exchange of smart and sustainable solutions between the Nordics and the rest of the world.

4) Exploitative vs. Nature-based

Sustainability is no longer merely a choice. Goal 11 of the UN Sustainable Development Goals outlines the objective of making communities inclusive, safe, resilient and sustainable. To meet this objective, we need to take an active interest in the governance and management of the city or municipality, to identify barriers and opportunities, and to put into place measures and incentives to speed up process improvements and innovation.

To secure the sustainable development of cities and communities, we need to plan for improving their economic, social, ecological and infrastructure resilience. Smart technologies can provide new tools for taking preventive measures, responding to emergencies, and planning for longer-term sustainability and growth. But as the recent pandemic has proven, new solutions sometimes face challenges in acceptance. Therefore, active citizen engagement plays a key role in resilient smart city development.

We commit to sustainable development in our cities and communities that meets the needs of the present without compromising the ability of future generations to meet their needs.

5) Inclusion, Involvement and Accessibility vs. Alienation and Exclusion

To be considered 'smart', a society must reinforce the involvement and engagement of everyone, recognize the diversity of citizens, counteract the segregation of minorities, and try to eliminate physical as well as digital barriers. Design is an undervalued quality when it comes to accessibility and inclusion – we need spaces and places that foster random meetings, timeouts, happenstance and play.

Encouraging engagement and inclusion of all groups of citizens, smart communities will provide more opportunities for all and help prevent particular groups being left out of positive impacts or disproportionately affected by new technologies or services being introduced.

For the citizens of smart communities to thrive, we must also acknowledge the crucial role of education. Smart education programs that promote digital literacy, inventive thinking, effective communication and teamwork will empower citizens and facilitate a more active *role* in *smart city* initiatives. This is also an efficient way of engaging the young generation in community development, giving them the opportunity to 'hack their own city' and find ways of challenging the status quo. The Nordic Smart City Roadmap encourages a life-long learning perspective that starts at a young age, but also embraces citizens in other parts of the civil society spectrum, including the elderly, the disabled, outcasts and minorities.

The Nordic Smart City Roadmap challenges cities and communities to plan and execute initiatives that promote inclusion, involvement and accessibility instead of alienation and exclusion.

Action areas

The Nordic countries are using a holistic approach to bring positive societal change, giving less attention to a specific urban subsystem and more to the ecosystem of living. The following five action areas of this holistic ecosystem approach are:

1. Leadership

Local and regional governance models play an active role in collaborating and sharing knowledge and learning across borders. Citizen emancipation is at the core of participation and innovation processes for the development of cities and services.

2. Inclusion

Cities and regions have a strong commitment to increase the accessibility of spaces and services, and to provide equal opportunities and a safety net for all citizens. The voices of communities and grassroots organizations will systematically be incorporated throughout smart city projects.

3. Living Environment

Regenerative thinking is central to Nordic cities when it comes to planning. Planning the built environment focuses on circularity and respect for the living ecosystems. Retrofitting infrastructures is a common practice. Combinations of nature-based urban design and new technology represent major potential in the Nordic Smart City Roadmap.

4. Digital Communities

Approaching data as a shared resource, Nordic cities have managed to establish a relationship of trust with citizens. People are given ownership over their data and local communities are empowered by user-driven technology employed to support citizen well-being.

5. Health and Well-being

Demands for healthcare services are increasing in both urban and rural areas. In the Nordics, the pursuit of greater health and well-being has stretched smart city activities beyond technological innovation to directly impact resident lifestyles and become more socially relevant – lending relief to the public healthcare system.

All photos: unsplash.com

Barriers and principles

In the following chapters, we will outline barriers and principles for each of the five action areas that we consider particularly crucial in developing a smart city model that puts its citizens' quality of life at the centre.

Barriers

Barriers are the hurdles and obstacles we need to overcome to develop smarter and more sustainable communities. They are the intangible forces that slow governance innovation and the implementation of new ideas and innovations. While these barriers are identified in the Nordics, many of them are common to cities and communities worldwide.

Principles

Principles represent the conceptual, ethical and political guidelines that lead urban development. They are the ethos of our communities and define the mandate of our municipalities. They are consciously and unconsciously derived from broad societal values that are unique to the Nordics, and we use these principles to address the barriers.

Action Area 1: Leadership

Barriers

LACK OF COOPERATION
Developing solutions at city level without considering the Nordic regional scale hinders cooperation and results in uncoordinated actions to global urban challenges. Municipalities do not need to find answers in isolation – they can be enablers to help them emerge by sharing and cumulating knowledge and facilitating scalability through strategic partnerships.

LIMITED COORDINATION ACROSS SILOS
Institutional arrangements and coordinated action across departments and sectors are necessary to tackle societal challenges holistically. Defining roles and boundaries fosters accountability and benefits the implementation and evaluation of processes. However, innovative frameworks and mechanisms require experimentation – the lack of incentives impedes breaking silos to widen existing networks and coalitions.

LACK OF CLARITY IN GOVERNING PRINCIPLES
Demographic changes and social inequality increase the complexity of finding a common framing of governing principles. Citizens' needs and capabilities differ, and some communities feel excluded from public discourse. Adopting and broadcasting a shared understanding of an issue or principle can promote fair allocation and collective action. And thereby turn cities into hubs of productivity and innovation, instead of testaments to inequality and poverty.

SHORT-TERMISM AND INSUFFICIENT KPI'S
The mitigation of social and ecological challenges in cities requires new solutions. Mission-oriented policies activate a sense of purpose and provide specific measures to tackle such issues. To push forward meaningful missions, municipalities must value societal benefits instead of short-term success. A mission calls for leadership, broad support, clear strategies and key performance indicators (KPI's) that value citizens' well-being and satisfaction. This cannot be achieved without communities' commitment as a whole.

LIMITED AND SUPERFICIAL CITIZEN INVOLVEMENT
The level of citizen participation in urban development processes is too low. There is a lack of knowledge about tools and methods for involvement, lack of opportunities for participation and lack of motivation for engagement. Communities – large and small – benefit from combining social and human capital in a collaborative arrangement where citizens participate in decision-making and contribute to change.

Principles

BOTTOM-UP APPROACH AND CITIZEN EMPOWERMENT
Participation is at the core of any structural change. A human-centered approach to smart communities systematically incorporates citizens and grassroots organizations, providing possibilities to shape local development and contribute to smart city goals.

COLLABORATION AND OPEN SOURCE ACROSS REGIONAL BORDERS
Smart solutions demand multilevel and cross-sectoral collaboration. Enabling public and private actors to engage in decision-making enhances knowledge transfer and value creation. Policy exchange between Nordic municipalities helps identify common challenges and implement development strategies that mitigate regional disparities.

INNOVATION INFRASTRUCTURE AND KNOWLEDGE
Nordic cities and municipalities invest in world-class research and innovation infrastructure. They provide digital and physical platforms and networks for participation in innovation processes. Knowledge is recognized as a shared resource, and cross-border cooperation is promoted.
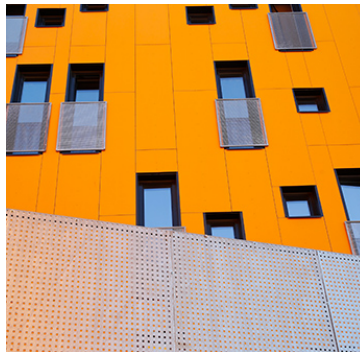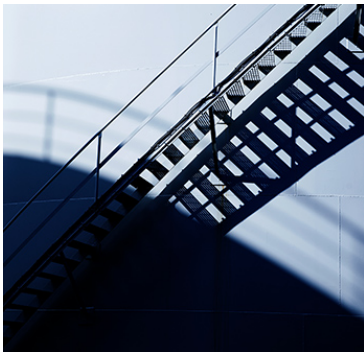
All photos: Sverre Chr. Jarild

Action Area 2: Inclusion

Barriers

URBAN / RURAL GAP
Limited regional approaches to planning deepen the urban/rural divide. Multilevel cooperation is crucial to strengthen the complementarity and connectivity between territories and to help combat regional imbalances. Extending smart city principles to rural areas and resourcing nature-based solutions in cities pave the path towards sustainable development.

LIMITED ACCESSIBILITY TO URBAN PUBLIC SPACES
Many cities and municipalities are deficient in viewing accessibility and inclusion as a matter of civic responsibility and compliance. Accessibility of urban public spaces strongly affects people's living conditions. Intelligent environments and the automation of processes and functions in urban spaces can provide new opportunities and promote inclusion and participation of all citizens.

GROWING EXPECTATIONS
Citizens are increasingly getting instant, anywhere, anytime, personalized access to information and services via mobile devices and computers. They have come to expect that same kind of access to city services. Now municipalities face a growing impatience with citizens who are used to speed, availability and efficiency. These are expectations that many find difficult to meet. The end result is a bigger gap between the promises of a smart city and the actual day-to-day experiences among the city public.

GAPS BETWEEN MOBILITY MODELS AND ACTUAL USERS' EXPERIENCE
Modelling transit does not reflect actual use and human perception. Cities and municipalities are increasingly planning service delivery and routes based on computer-generated models of human behavior. Eventually, mobility services are optimized based on these models, which rely on a generalized assumption of the most generic, shortest or efficient mobility patterns. Optimization increases service efficiency but does not take special needs into consideration.

SOCIAL INEQUALITIES
Increasing social disparities between rural and urban areas and within cities pose a challenge to social equity. Improving the quality of social services and multimodal mobility options is key in enabling citizen participation, increasing local attractiveness, and reducing the need to commute. There is a need for public transportation systems that combine shared, autonomous and affordable solutions will improve rural mobility and access to services.

Principles

**SMART COMMUNITIES INCLUDING THE RURAL REGIONS**
Smart city goals are not only limited to large cities but acknowledged as universally applicable. Smaller communities can be used as flexible test arenas for developing solutions to smart city challenges – helping bridge the gap between urban and rural.

ACCESS TO NEW TECHNOLOGIES AND SERVICES
High accessibility in our urban environments benefits everyone, and Nordic municipalities promote inclusion and equal access to services. They democratize technology, leading to more rapid development and innovation and allowing for improved products and services to become more universally accessible.

MOBILITY AS A SERVICE AND AS AN EXPERIENCE
A people-centric approach to mobility considers the human experience of travel before the efficiency of the technical system. It is about providing possibilities to plan and travel between locations utilizing sustainable transit modes – taking accessibility and inclusiveness to a whole new level.
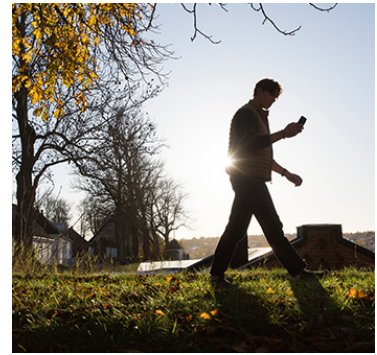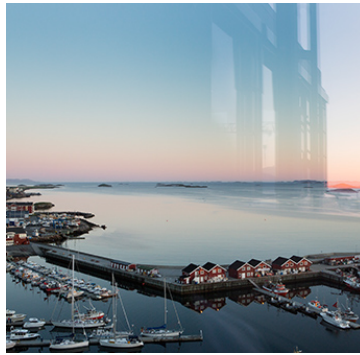
All photos: Sverre Chr. Jarild

Action Area 3: Living Environment

Barriers

INSUFFICIENT INFRASTRUCTURE
Environmental change is affecting cities and their inhabitants more frequently. This poses new challenges for city planners, such as the need to improve air and water quality and control noise pollution to create a healthy and enjoyable environment for the citizens. Data intelligence and new technology can help cities make informed decisions to develop strategies for improving infrastructure and, ultimately, living standards, competitiveness and sustainability.

NEGLECTING THE VALUE OF CULTURE
As cities are developed and existing urban areas are renewed, cultural infrastructure is usually given the least importance. That means that the tangible, intangible, and natural cultural heritage often will be the losing party when clashing with modern infrastructure and technology-savvy city developers. The value of cultural infrastructure and heritage management needs to be given more emphasis in the development of smarter and more liveable cities and communities.

SPATIAL INJUSTICE
Although Nordic cities promote sustainable uses of resources, nature lacks a clear and quantifiable value. There are conflicting spatial needs in cities, and economic benefits are still perceived as higher attractors than social, environmental, and cultural ones. Strategic densification should not be detrimental to the planning and preservation of green areas. Local food production and nature as a driver of public health require particular attention to tackle social inequalities and build resilient cities.

CIRCULARITY IS STILL MARGINAL
Circularity as a principle is increasingly relevant, but the transition from linear to circular economy is complex. It relies on stakeholder action at multiple stages of the transition process. Several barriers currently hinder cities from moving forward – ranging from lack of political support, confusion and uncertainty regarding the interpretation and meaning of the concept, insufficient funding, inadequate tax systems, silo and short-term thinking as well as low citizen awareness. It is a long path from degeneration to regeneration.

DEPENDENCE ON FOREIGN DIRECT INVESTMENTS
Cities and construction companies increasingly rely on foreign direct investment to finance larger projects. This is often an obstacle to homegrown innovations, location-sensitive developments, and genuine local involvement in the production of space. Expected returns are also shifting these projects from social to economic endeavours, meaning that the end goals of urban regeneration projects become less about creating a better living environment and more about increasing the revenue on tangible capitals – consciously feeding gentrification processes.

Principles

REGENERATIVE CITIES AND REGIONS
Growth ambitions must respect the earth's atmosphere, oceans and ecosystems. Nordic cities and communities strive to not only sustain but to actively regenerate the natural resources they need and absorb. They commit to cutting CO_2 emissions and implementing circular economy solutions across sectors.

COMMUNITY-BASED DEVELOPMENT
Local governments take a humble approach to policymaking. District-level associations and interest groups are supported to initiate and co-create ideas for urban development. Districts are more than administrative boundaries; they are seen as promoters of local innovations.

BUILDING ON PLACE IDENTITY AND CULTURE
Community development is not about designing or constructing a site but facilitating a process of empowering the local community to improve their environment. Cultural and historical background is taken into consideration in this process – building on and promoting identity of place.

All photos: unsplash.com

Action Area 4: Digital Communities

Barriers

DATA OWNERSHIP
Big tech companies have a stronghold over ownership and access to data, and current models of data ownership are unsustainable. Simultaneously, there is a lack of accessible tools and services for citizens to take back personal control of their data. Integrating digital ethics and data commons can provide an alternative to data ownership, bringing awareness to what people find meaningful and the value of their data. The simpler it is to control one's personal data, the more trust initiatives will likely receive.

PUBLIC TRUST
Trust is central in Nordic culture, and although it is subjective, it strongly relies on the quality of information. To sustain this trust, the open negotiation of rights, benefits, and responsibilities is crucial. Without ethical and up-to-date guidelines, scepticism towards data collection and analysis will only increase. Fostering public trust in sharing information is essential, for the quality of data impacts the quality of service development and provision.

SECURITY AND PRIVACY
Data protection is both lacking and prevents information sharing. Mistrust concerning digital security is not only a matter of perception: it entails profound questions about autonomy and sovereignty. Without reviewing the laws that regulate the exchange of data for necessary services, welfare systems and people-centric smart visions are at risk.

DATA RELEVANCE GAP
There is an increasing gap between the data collected by cities and the data that is socially relevant. Most datasets owned by cities focus on mapping service efficiency while there is less information about the mental, physical and social well-being of their citizens.

There is also a lack of compatibility in data system infrastructure between urban and rural areas. There is less data available from rural areas but shifting our focus from quantity to context can help regions find pertinent insights and solutions. Incorporating data feminism approaches to bridge this gap can also lead to more inclusive, prosperous and interdependent communities.

EQUAL ACCESS
Today, there is unequal access to education, services and support systems concerning digital infrastructures. This poses a problem as the increasing and expanding digitalisation of services will create new forms of exclusion instead of mitigating them. More and more people are increasing their digital literacy and access to digital services, but there is still a major gap between the quality, speed and accessibility of digital services between large cities and smaller communities. Many crucial services are available only in capital cities, establishing a self-reinforcing circle where more services produce more data and more

data help improve those services, while the rest remain excluded from this process.

Principles

REGENERATIVE CITIES AND REGIONS
Growth ambitions must respect the earth's atmosphere, oceans and ecosystems. Nordic cities and communities strive to not only sustain but to actively regenerate the natural resources they need and absorb. They commit to cutting CO_2 emissions and implementing circular economy solutions across sectors.

COMMUNITY-BASED DEVELOPMENT
Local governments take a humble approach to policymaking. District-level associations and interest groups are supported to initiate and co-create ideas for urban development. Districts are more than administrative boundaries; they are seen as promoters of local innovations.

BUILDING ON PLACE IDENTITY AND CULTURE
Community development is not about designing or constructing a site but facilitating a process of empowering the local community to improve their environment. Cultural and historical background is taken into consideration in this process – building on and promoting identity of place.

Photo: unsplash.com

Photo: Sverre Chr. Jarild

Photo: unsplash.com

Action Area 5: Health and Well-being

Barriers

LACK OF POLITICAL CONSENSUS ON WHAT CONSTITUTES A HEALTHY CITY
The conventional assumption is that health policy is a matter for health care professionals. But a concern for health and well-being is becoming more and more central to many aspects of policymaking. It encompasses social, economic and environmental purposes of urban development. Whilst this is intuitively obvious, it is institutionally problematic. We need a more fundamental reassessment of the role of the planning and design of human habitation in promoting health and well-being.

OVERLOOKING THE NEED FOR SOCIAL SUSTAINABILITY
Social sustainability is a process for creating sustainable places that promote well-being, by taking into consideration what people really need from the places where they live and work. Unfortunately, there is still an evident lack of willingness to implement sustainable means of social development, preventing all citizens from contributing to and benefiting from a city's success. Thus, smart city initiatives should be implemented in a way that fosters social inclusion and speaks to all categories of citizens. Technology can be a powerful tool to make silent voices heard and build connections between people.

PHYSICAL ENVIRONMENT DISCOURAGING ACTIVITY
As the world is becoming more urban and its population less physically active, cities face the growing burden of lifestyle diseases. Infrastructure, or policies related to infrastructure, can prevent residents and communities from accessing the needed care of performing activities related to wellness. To counter this, cities must provide conditions and opportunities that encourage, enable and support healthy lifestyles for people – regardless of age, gender or socio-economic background.

UNPREPARED FOR THE UNEXPECTED
In the face of the Covid-19 pandemic, resilience is increasingly being recognized as a key factor and an important tool for improving the capacity of urban and regional systems to respond to a variety of challenges that might threaten the stability and liveability of communities. Vulnerable to disruptions, cities need to adopt preventive measures, responding to emergencies and planning for long-term sustainability and growth. There is a need for a learn-and-adapt mentality and more systemic innovation.

LOSS OF BIODIVERSITY
The world is losing its biological diversity at an alarming rate. The primary force driving this development is habitat degradation caused mainly by agriculture and urbanization. In order to safeguard the living conditions of all species – including humans – we need to adopt a life-centred approach to urban development that regards biodiversity as a prerequisite for people, society, wildlife and the environment.

Principles

ENHANCING PHYSICAL AND MENTAL WELLBEING
Public health is at the centre of new local development initiatives in communities large and small, and new solutions are implemented to encourage more physical activity. It is about creating spaces that are socially inclusive and promote well-being for all living species.

A LIFE-CENTRED PERSPECTIVE
Nordic municipalities adopt a life-centred perspective that acknowledges and expands the role of nature and biodiversity in urban planning, focusing both on protection and restorage as a holistic, long-term strategy building on local premises.

BUILDING SAFE AND RESILIENT COMMUNITIES
Nordic municipalities can assess, manage and monitor risks. They are flexible and resourceful, and have the capacity to accept uncertainty, respond to change and build on past experiences. Infrastructure and connections are key factors.

All photos: unsplash.com
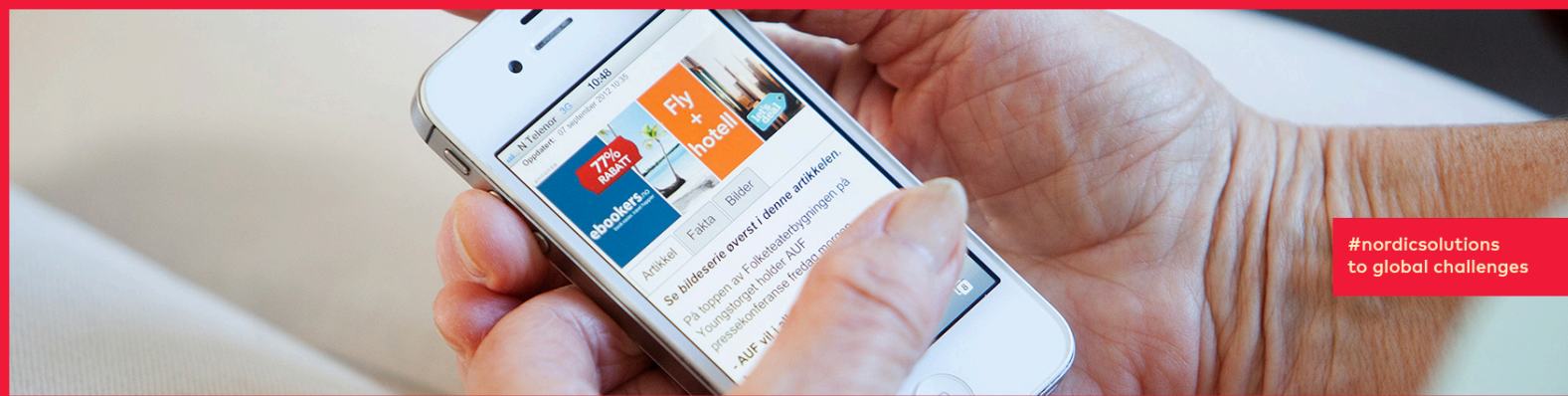
The process

The Nordic Smart City Roadmap initiative is funded and supported by Nordic Innovation, an organization under the Nordic Council of Ministers.

The working group consists of the following organizations:

Nordic Smart City Network
Nordic Edge
Design and Architecture Norway
Demos Helsinki
Danish Design Center
Danish Architecture Center
Bloxhub
Iceland Design and Architecture
Nordic Urban Resilience Institute

We have collected input through three open digital workshops gathering more than 200 participants from across the world. These were facilitated by Danish Design Center, Demos Helsinki, Design and Architecture Norway and Nordic Edge.

In addition, we have established a Nordic panel consisting of smart city experts from different sectors and disciplines, who have provided valuable input to the process:

Finland
Heli Kotilainen, Setlementtiasunnot
Eemil Rauma, ITS Finland
Lotta Haukipuro, GenZ project, University of Oulu
Heini Lehtinen, Raven & Wood Agency
Jarmo Eskelinen, University of Edinburgh
Katarina Siltavuori, Archinfo

Denmark
Maja Yhde, HOFOR
Peter Bjørn Larsen, Smart City Insight
Lasse Steenbock Vestergaard, Aarhus University
Martin Brynskov, Open and Agile Smart Cities
Rebecca Preston, They/them
Enlai Hooi, Schmidt Hammer Lassen

Norway
Einar Sneve Martinussen, Oslo School of Architecture and Design
Moa Björnson, Municipality of Træna
Fredrik Gulowsen, Nyby
Janne Ørka, Norconsult
Lisbeth Iversen, Municipality of Arendal
Savis Gohari, Norwegian University of Science and Technology
Silvija Seres, Lørn

Sweden
Albert Edman, Viable Cities/RISE
Soraya Axelsson, City of Helsingborg/H22
Johan Sandström, City of Umeå
Anna Hessle, Sweco

Next steps

The Nordic Smart City Roadmap provides a framework for smart city initiatives in the Nordics and beyond – describing the overriding vision, the principles we will adhere to and the barriers we will work together to overcome.

It is also an invitation to collaboration. We encourage Nordic and international cities and municipalities to use the roadmap and commit to its principles. We invite both public and private organizations and companies to share urgent problems, as well as solutions, methods and tools that can help solve these. In this way, we want to demonstrate how the roadmap can be realized in practice – promoting the development of smart, attractive and sustainable communities in the Nordic region and beyond.

About
this publication

The Nordic Smart City Roadmap

NORDIC INNOVATION

Nordic Innovation aims to make the Nordics a pioneering region for sustainable growth and works to promote entrepreneurship, innovation and competitiveness in Nordic business. Nordic Innovation is an organization under the Nordic Council of Ministers.

Read more Nordic Innovation publications at www.nordicinnovation.org/publications