

# Sharing a Sustainable Urban Future: A Nordic Cities Perspective

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Every minute, 120 people arrive in cities around the world. Whether it's through movement or birth, this population increase, coupled with a lion's share of global greenhouse gas (GHG) emissions and economic production, puts city regions squarely at the centre of climate change action. Strikingly, this growth – population wise, economic and otherwise – is not limited to a handful of regions, but rather, is manifesting itself worldwide. This is evident in the UN study *Transforming our Future*, which includes the oft-cited figure that 66% of the world's population will live in urban areas by 2050.

**➤** In a Nordic context, contemporary cities are characterized by their commitment to accessible greenery and water, health, wellbeing and the environment. This has been reflected in a strong urban focus on resilience, compact development, sustainable mobility, and a low carbon economy.

The sustainability success stories achieved in the Nordic countries arise at least partially out of their regional context, but this does not limit their relevance or prevent their application to other cities beyond the Nordic region. This article explores examples of such stories.

## **GROWTH WITHOUT EMISSIONS**

There is a long tradition of environmental awareness and protection in the Nordic countries. More than a century ago, this was demonstrated through efforts

to preserve green and blue space for urban workers and their families. Fast-forward to 1972, and this focus was illustrated when Stockholm hosted the UN Conference on the Human Environment, the first UN conference on environmental protection.

More recently, this emphasis and leadership on environmental issues has manifested itself through a host of actions that have seen GHG emissions decline even as Nordic economies have grown, and strategies that emphasize the interaction between climate change mitigation and adaptation, which are typically addressed separately.

## **Preparing cities for climate change**

By integrating mitigation and adaptation policy, Nordic cities aim to strengthen their resilience to climate change events. For these cities, there is particular con



*Western Harbour. Malmö. Photo: Shutterstock*

cern regarding the impacts of water-related issues—such as increased precipitation, sea level rise and urban flooding, all of which are projected in this region by the IPCC. Nordic cities have translated this concern into an opportunity to renew and reinforce their commitment to high-quality green and blue spaces.

In practice, this has motivated Stockholm to make a 1.4+Bn USD investment in its central locks system, which control the flow of water between the Baltic Sea and Lake Mälaren, the region's primary source of drinking water. It has also led the city to adopt a new storm-water strategy that prepares for a 30% increase in precipitation by 2100 and to improve the quality of storm-water to reach the city's environmental quality standards. Zooming in, efforts to achieve greater resilience through the improvement of blue and green space are evident in an innovative new public space in Copenhagen. Designed as a multifunctional space that can handle rising volumes of rain, Tåsinge Plads is a square that shows that rainwater can inspire new recreational spaces. Likewise, the winning project from the Nordic Built Cities Challenge in 2017, the Soul of Nørrebro, addressed rainstorm flooding while simultaneously addressing local social community development.

From megaprojects to fine-grain public spaces, Nordic cities are supporting resilience and preparing for climate change in a diversity of way. Cities worldwide face similar challenges, and whether they seek billion-dollar solutions or small-scale improvements, the Nordic context offers useful insight.

### **Green and blue, Nordic cities breathe**

Beyond resilience, green and blue spaces are viewed as essential in improving the health, living conditions and quality of life for Nordic citizens living in urban areas. Here, people live closely together in densely populated

neighbourhoods that provide rich opportunities for human interaction and socializing. However, as Nordic cities demonstrate, density need not hinder access to green and blue space.

By viewing these spaces as essential to mitigating the effects of climate change, promoting biodiversity and improving the health, and quality of life of residents, the question is inverted – how can cities afford NOT to provide accessible green and blue spaces? In an effort to sustain low-cost growth, many cities allow sprawl at the expense of degrading their natural and public spaces. Here too, the Nordic cities offer a more sustainable alternative. By reconfiguring existing structures, such as former industrial sites and harbour areas, rather than building new ones, population and economic growth is accommodated with minimal sprawl.

This has been illustrated in the pioneering Western Harbour project in Malmö, Sweden, where planning authorities required a green space factor of 0.5 - a fifty-fifty share of sealed soil and green space in the new area. By specifying an index, instead of formulating detailed rules, the authorities managed to safeguard greenery and reduce rainwater runoff, while enabling construction companies to find innovative solutions of their own, including ideas such as green roofs and allotment gardens.

### **Planning for sustainable mobility**

Nordic cities understand that the design and management of the built environment can influence certain behaviours that impact sustainability. Given the distance barriers within and between their cities, they also recognize that minimizing energy consumption in the transportation sector offers a substantial opportunity to become carbon neutral by 2050. As a result, many Nordic cities, with the support of national governments and authorities, have adopted compact green-city approaches, where walkable cores and nodes are in proximity to green or blue space.

Nordic national governments steer this approach through spatial planning frameworks and directives, which municipalities apply in the form of compulsory (or guiding, in Sweden) comprehensive land use plans. Independently, this approach could lead to denser urban forms, but it would not directly improve transit system accessibility. To ensure this, national and regional transit and road authorities, who also receive national directives, are engaged in coordinative planning exercises to couple urban development and transit accessibility. In turn, these plans for greater density and transit accessibility, along with the appeal of walkable and bikeable neighbourhoods that these plans support, serve to guide developers in their quest to identify desirable locations for development.

Copenhagen's *Green Finger Plan*, where development runs along transit corridors, exemplifies this approach. Meanwhile, health- and environmentally-focused planning in Helsinki has led to a city where 40% of the land is green space. In growing areas, these

actions can occur through a strategy known as transit oriented development. Stockholm's new yellow line subway exemplifies this strategy. Not only does it expand the region's high-quality transit system, its very construction unlocks the potential for thousands of dwellings within a constrained land area.

By making it convenient to walk, bike and take transit, many residents in these environments choose to forego private automobile use, and even ownership. With these incentives in mind, a range of actors cooperate to their mutual benefit, and in doing so, also reinforce a sustainable urban form. Why shouldn't national and municipal governments, transit authorities and developers around the world benefit from a compact development and low-carbon mobility approach that provides housing for many while shaping a more sustainable future?

### **Creating neighbourhoods that consume less**

Beyond transport, improved building performance offers another key opportunity for climate change mitigation. Nordic cities are addressing this primarily through three approaches: green building at both the building and neighbourhood scale, stringent energy standards on all new buildings, and building retrofits.

Efforts to reduce energy consumption in the transportation and building sectors are supported by a long tradition of climate and environmental monitoring in the Nordic Region. Illustrating the triple-helix approach that Nordic cities have used extensively to support environmental innovation, monitoring is often carried out by academic institutions, innovations to improve the results are developed by private actors, and new ambitious standards are implemented by the public sector.

Although the performance of new green buildings

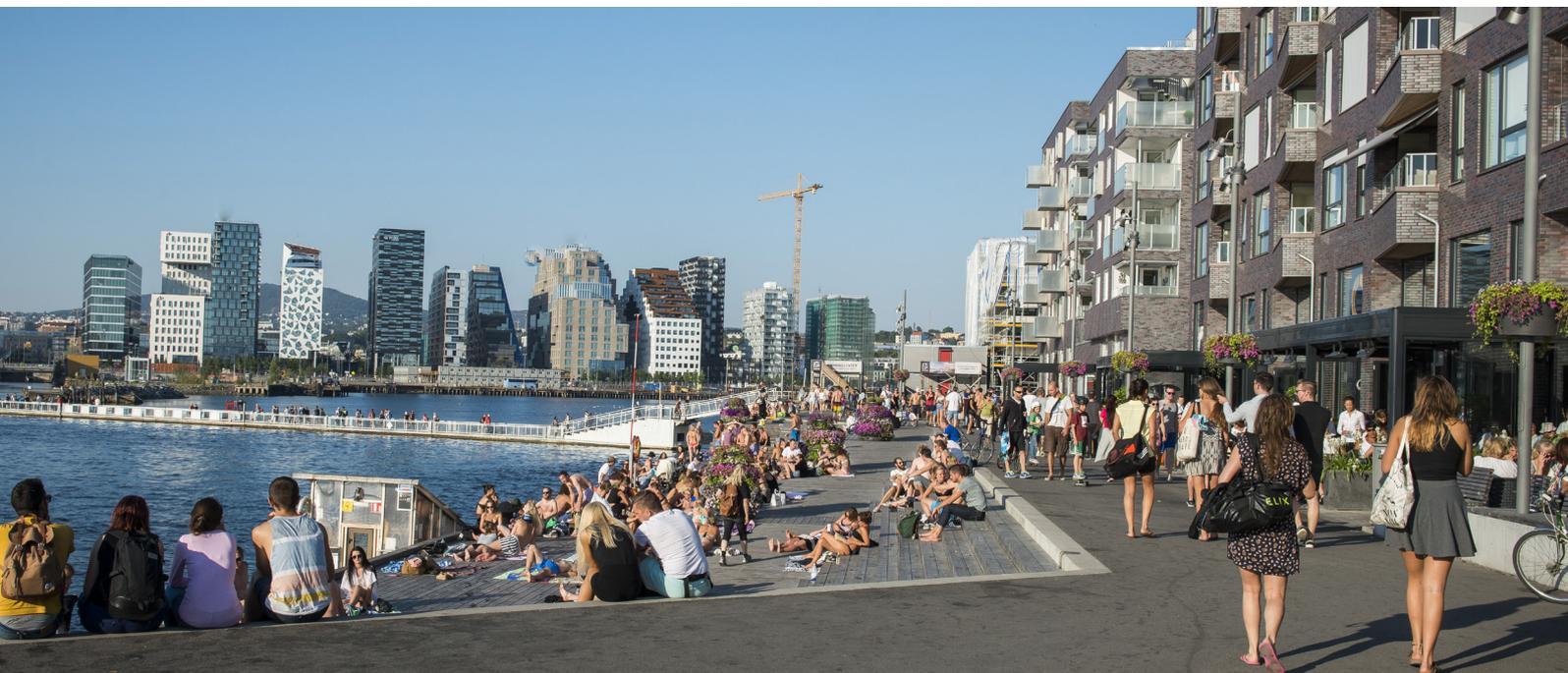
in the Nordic Region is strong, continued improvements are required in existing structures. Approximately 70% of the estimated building stock for 2050 has already been constructed; including the extensive supply of modernist apartment housing that is prevalent in larger Nordic cities. As such, building retrofits are vital to sustainability improvements. Equally important, many of these buildings are located in disadvantaged and marginalized neighbourhoods. Conducting the retrofits, while ensuring they remain affordable to residents is essential to social sustainability. As in other places, Nordic cities face ongoing challenges in reducing energy use and minimizing climate change impacts.

### **District heating – a Nordic success story**

Between 1990 and 2011, total Nordic GDP rose by 55% while emissions were reduced by 9%. This is an impressive feat, but for this trajectory to be sustained long-term, a transition to a circular economy is vital. Critically, this shift will require that Nordic cities address high levels of material consumption among residents.

Business models based on the circular economy have been embraced by a wide range of private actors, including those working in the food, textiles, electronics, building and construction, and packaging, sectors. Having been used in Nordic cities for more than a century, district heating may represent one of the earliest technology-based efforts to create a circular economy. This heating system extracts heat from wastewater, waste incineration and other sources and transfers this heat to a series of buildings within a defined grid. Despite this long history, innovation in district heating continues.

Supported through public sector management, private financing and academic research, fourth generation district heating technology includes low-tem-



perature heating supplies, improved heat transmission infrastructures, heat recycling, and building innovations such as smart metering, floor heating and local heat exchanges for hot water heating. This technology is being applied in new mixed-use developments in a number of Nordic cities, but more importantly from an economic standpoint, is also being exported to environmentally progressive cities around the world. Despite this success, portions of Nordic society have not benefited from the rise of cleantech and economic growth coupled with emissions reductions. To achieve sustainability on all fronts, integrating a more diverse range of residents will be vital.

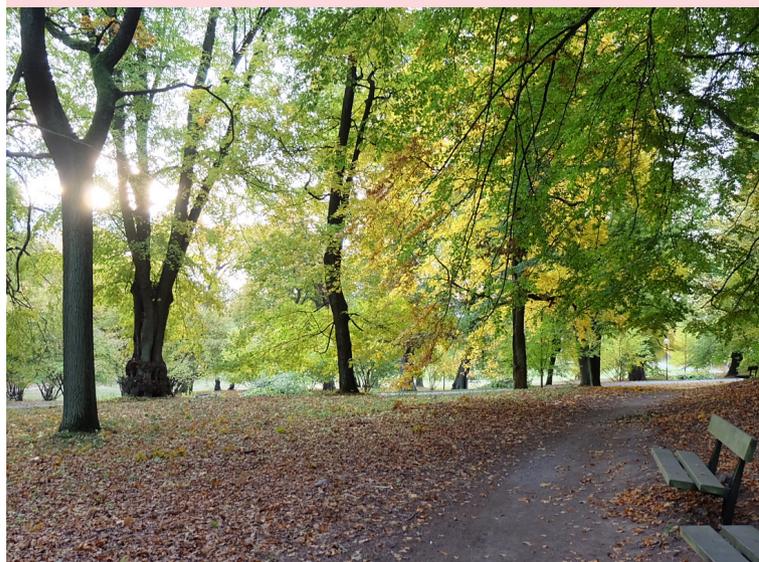
District heating is not a new industry in the Nordic region. Casual observers could easily be forgiven for thinking that innovation in this field was "done". But through triple-helix cooperation supported by a broad pursuit of creative sustainable solutions, new products and even business models continue to emerge.

## CONCLUSION

Sustainability, or the lack thereof, presents many challenges around the world today. However, as illustrated by efforts in Nordic cities, there are solutions. Supporting resilience, compact development, sustainable mobility and a low-carbon economy are key steps towards a sustainable future. But equally, or perhaps even more importantly, efforts to achieve these goals and achieve sustainability can also enhance wellbeing, improve quality of life and strengthen the economy, enabling residents to thrive. By combining Nordic cooperative know-how with strategies, products and ideas that are relevant to specific regions or contexts, there is a tremendous opportunity to unlock new opportunities. In doing so, a healthier, greener and thriving future awaits. ●



*Pilestredet. Photo: Marte Garman*



*Hagaparken, Stockholm. Photo: Johanna Feuk*

## ABOUT THIS ARTICLE

This article is based on the White Paper on Nordic Sustainable Cities by Borges, L. A et al. (2017).

More information about the White paper and the Prime Ministers' initiative on Nordic Sustainable Cities can be found at [www.nordregio.se/nordicsustainablecities](http://www.nordregio.se/nordicsustainablecities)

Frontpage photo: City garden in Helsinki.  
Benjamin Soumela/norden.org  
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