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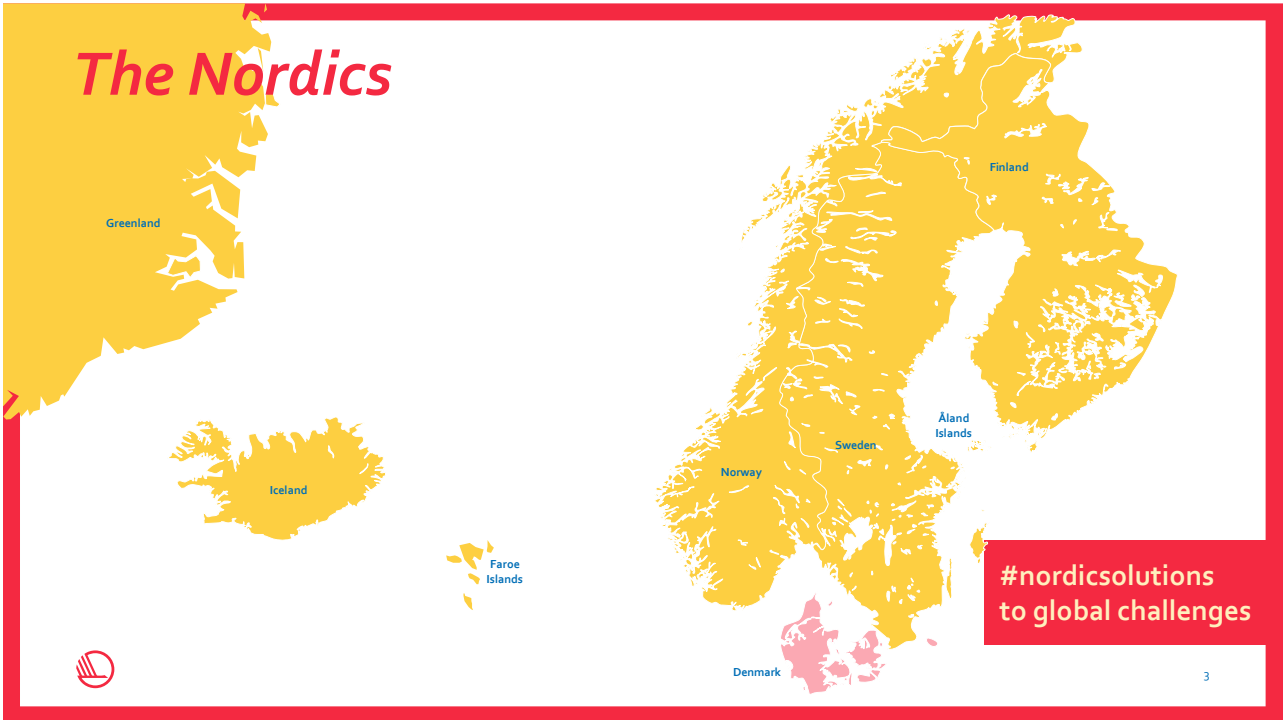
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to global challenges



# *What makes a sustainable city?*

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## ***Nordic Innovation in brief***

- Funded by the Nordic Council of Ministers - the official inter-governmental body for cooperation in the Nordic region
- Nordic Innovation supports projects and programmes to stimulate innovation and works to improve the framework conditions for Nordic markets and exports
- Annual budget of appr. NOK 80 mill
- Office in Oslo with 21 employees from all Nordic countries and various business areas
- Priorities based on the Nordic Co-operation Programme for Innovation and Business Policy (4 year periods)



## ***Our mission:***

*To contribute to sustainable growth, increased entrepreneurship, innovation and competitiveness in the Nordic region.*



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# The Nordic Cities

*What makes a sustainable city?*

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## Inclusive City

*Cities made for and  
by the people*

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## Inclusive City

Gothenburg, in Sweden, is experimenting with new methods of rent control on newly built apartments in the large Frihamnen brownfield development project.

Copenhagen has initiated campaigns to increase public support for wind energy. The campaign efforts have reduced resistance against wind turbines in the city, and paved the way for building more than 100 new and off-shore wind turbines by 2025.

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1. Borges, Luciane Aguiar et al. (2017): "White Paper on Nordic Sustainable Cities". Stockholm: Nordregio, pp. 28-30  
2. Stateofgreen.com

## Inclusive City

The Nordic countries have developed a Nordic charter for universal design.

Nordic cities are ambitious regarding accessibility and safety in public spaces.

Participatory planning is highly valued and expected to contribute to more democratic societies .

Finland is the only European country with falling homeless rates.

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1-4: Borges, Luciane Aguiar et al. (2017): "White Paper on Nordic Sustainable Cities". Stockholm: Nordregio, pp. 28-30

## Case story: Helsinki, Finland

The City of Helsinki uses a mixed tenure housing policy to counter social segregation, bringing people of all backgrounds together in neighbourhoods.



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## Healthy City

*Human well-being and  
environmental health  
are one and the same*



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## Healthy City

Green areas reduce air pollution, mitigating the heating effects of grey structures and increase accessibility to green spaces.

By preserving nature and access to clean waterscapes, the Nordic cities are offsetting negative climatic effects, while increasing biodiversity and recreation.

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1. Borges, Luciane Aguiar et al. (2017): "White Paper on Nordic Sustainable Cities". Stockholm: Nordregio, pp. 32
2. Reeves, Christopher William (2017): "What makes a sustainable city?". Copenhagen: Danish Architecture Centre, p. 7

## Healthy City

In Stockholm, 47% of the total area is undeveloped land.

In Helsinki, greenery covers 40% of the city's land surface, forming a network of 'recreation areas'.

Reykjavik also has a "green scarf", a forest and outdoor recreational area at the edge of the urban growth area.

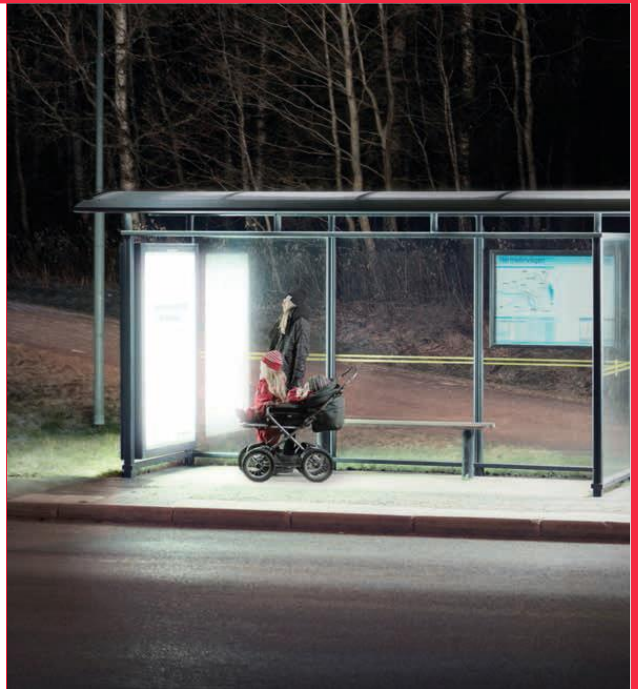
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- 3-5. Borges, Luciane Aguiar et al. (2017): "White Paper on Nordic Sustainable Cities". Stockholm: Nordregio, pp. 32



## ***Case story: Umeå, Sweden***

Umeå invites commuters to soak up the benefits of light therapy at bus stops. Installed with anti-SAD (Seasonal Affective Disorder) lamps, the repurposed bus stops have led to an increase in public transport usage while bringing the benefits of nature's best qualities to residents in the dark winter months.



## ***Case story: Copenhagen, Denmark***

The Copenhagen Harbour Baths are a result of an extensive clean-up initiative that has rid the harbour of industrial pollutants and sewage. Bathers can enjoy access to Copenhagen's three harbour baths and two urban beaches all year round.





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# Resilient City

*Climate change adaptation across actions*

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# Resilient City

The Danish Nature Agency has developed PLASK (splash) - a free-to-use tool that helps calculate the socio-economic consequences of climate adaptation in local areas.

Nansen Park in Norway includes solutions for the managing of stormwater, green structures with gutters, filtration ponds, retention basins and an outlet to the sea.

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1. Rafn, Katrine (2016): "Klimatilpasning er millioner værd". Naturstyrelsen.dk  
2. Folkestad, Beate/Habhab (2005): "Sustainable Fornebu". Oslo: Statoilbygg

## Case story: Tåsinge Plads, Denmark

Tåsinge Plads is Copenhagen's first climate-resilient urban space. It can handle rising volumes of rain at street level. 1,000 square metres of unused asphalt have been transformed into an urban landscape, and Tåsinge Plads can delay and percolate rainwater from a surrounding area of 4,300 square metres.



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## Compact Green City

*Balancing density and  
green infrastructure*



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## Compact Green City

Nordic cities are working to prevent urban sprawl by reconfiguring existing structures.

Copenhagen's urban development plan, known as the 'Finger Plan', champions the 'near-to-station-principle'. Whenever possible, new workplaces should be located close to public transport.

Studies show that outside central municipalities, only 40-60% of residents travel by car instead of public transport if they live within 600 metres of a well-functioning public transport station. If they have to travel more than 600 metres to get to a station, 75-85% travel by car.

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1. 2. Borges, Luciane Aguiar et al. (2017): "White Paper on Nordic Sustainable Cities". Stockholm: Nordregio, pp. 38-39
3. Nielsen, Peter Hartoft (2007): "Eurosprawl 2007". København: Skov- og Naturstyrelsen, pp. 23

## Compact Green City

In a pioneering project in Sweden, the planning authorities in Malmö required a green space factor of 0.5 for the expansion of the city's Western Harbour.

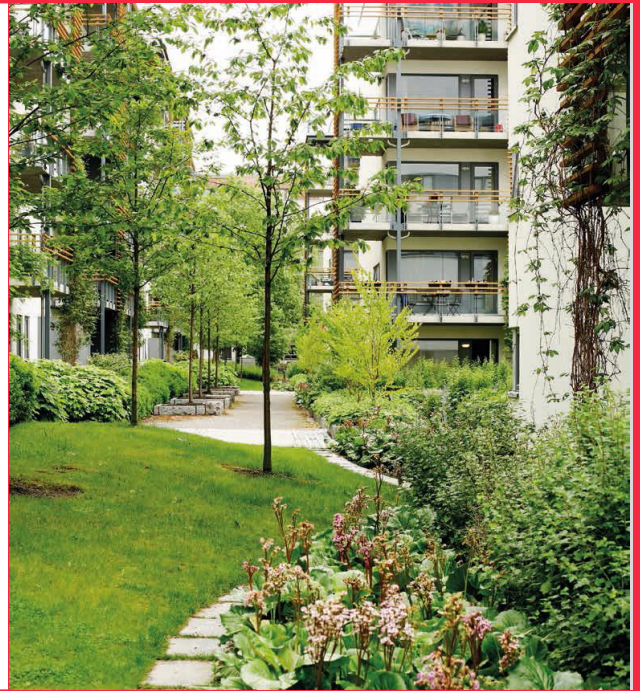
In Reykjavik, Iceland, 90% of all new residential units will be built inside the current urban area borders. This is to increase the close-proximity of public services and to reduce travel needs.

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4. Borges, Luciane Aguiar et al. (2017): "White Paper on Nordic Sustainable Cities". Stockholm: Nordregio, pp. 38-39
5. Reykjavik Municipality (2016): "City of Reykjavik's Climate Policy". Reykjavik: Reykjavik Municipality

## Case story: Oslo, Norway

The former hospital area of Pilestredet Park, Norway, was converted into housing, commercial and recreational space in 2006. The focus was on reusing existing materials and access to pocket parks and water features in the area.



## Mobility City

Several Nordic cities offer a range of car-sharing opportunities. Sunfleet, developed by Volvo, is a good example.

Sustainable urban mobility is promoted by offering cultural and retail services around transport hubs.

Maas, mobility as a service, integrates various types of transport services into a single mobility service that is accessible on demand.

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George, Patricia Aquino (2017). "White Paper on Nordic Sustainable Cities". Stockholm: Nordregio, pp. 42

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## Mobility City

Oslo is the world leader in switching to emission-free transport, thanks to ambitious investments in electric cars.

The Helsinki Metropolitan Area gas bus fleet will run on renewable biogas in 2017.

In Copenhagen, cyclists save the city more than 90,000 tonnes of carbon emissions, annually.

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4. Hockenos, Paul (2017). "Power to the EV: Norway spearheads Europe's electric vehicle surge" in theguardian.com

5. Gasum (2016). "HelB buses run on biogas in Helsinki Metropolitan Area" in Gasum.com

6. C40 cities (2011). "City of Cyclists Reduces Approximately 90,000 Tons of CO<sub>2</sub> Emissions per Year and Has Over 50% of the City's Population Cycling to Work Everyday" in c40.com

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## Case story: Oslo, Norway

The Oslo city centre will be car-free by 2019. Under development, the city is removing all on-street parking and narrowing car lanes to build new bicycle paths and prioritise pedestrians.



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**Low  
Carbon  
City**

*Growing without  
increasing emissions*

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## Low Carbon City

Since 2000, the Nordic economies have grown by 28% - at the same time the total carbon emissions have dropped by 18%.

Even though Nordic residents consume more energy per capita than the EU average, the carbon emissions are 50% lower than the average.

Copenhagen has set the ambitious target to become carbon neutral by 2025.

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1. Haagensen, Klaus Munch (2017): "Nordisk statistik". Copenhagen: Nordisk Ministerråd, pp. 16  
2-3. Borges, Luciane Aguiar et al. (2017): "White Paper on Nordic Sustainable Cities". Stockholm: Nordregio, pp. 6, 44-45

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## Low Carbon City

Oslo has installed a vast net of charging points for electric vehicles.

Gothenburg, Sweden, has a large-scale hybrid, self-driving vehicle pilot project underway.

In Iceland, geothermal power generate 25% of the country's total electricity production.

In Finland, the so-called HINKU municipalities have reduced their emissions by 12-18% in five years by replacing fossil fuels with renewables and curbing the use of electricity.

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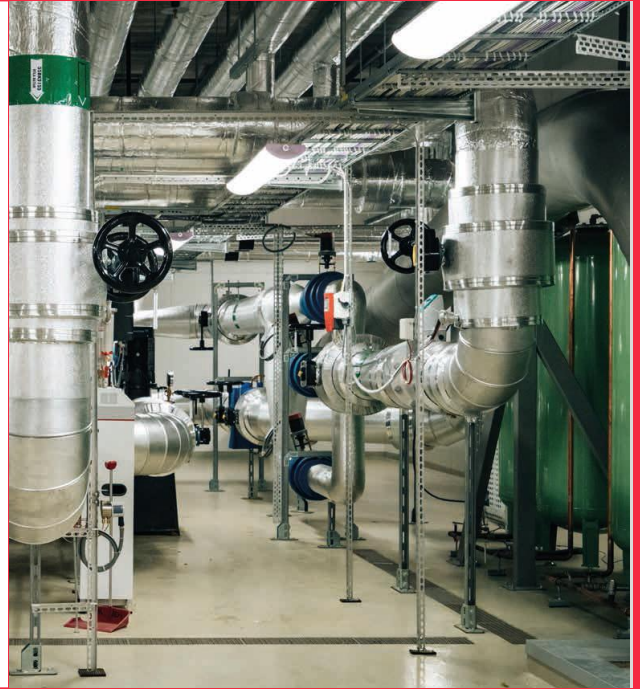
4-5. Borges, Luciane Aguiar et al. (2017): "White Paper on Nordic Sustainable Cities". Stockholm: Nordregio, pp. 6, 44-45  
6. Orkosteinnun (unknown): "Geothermal", on nea.is  
7. Niinistö, Ville (2014): "Finland - creating a low-carbon country" in climateactionprogramme.org

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## Case story: Stockholm, Sweden

Sweden's largest hospital is also its greenest! Achieving the LEED Gold standard, the hospital has a dedicated geothermal plant that provides 65% of its heating and cooling needs.



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## Circular Economy City

*Turning waste into a  
valuable resource*

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## Circular Economy City

The sustainable construction company Xella Danmark produces concrete blocks that can be reused and recycled in all parts of the product life cycle.

The Finnish company Martela designs circular furniture solutions with a business model based on repairing old items and reusing and recycling materials.

Swedish retail company Houdini offers sports equipment for rent, not for sale. More than 65% of Houdini's products have been converted into a circular life cycle.

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3.9. Borges, Ludena Aguilar et al. (2017). "White Paper on Nordic Sustainable Cities". Stockholm: Nordregio, pp. 6, 4. Stockholm: Vatten och Avfall (2017). "Biochar". In: stockholm.vattenochavfall.com

## Circular Economy City

In Stockholm, the Biochar Project uses park and garden waste to produce biochar (soil conditioner) and renewable energy.

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4. Stockholm: Vatten och Avfall (2017). "Biochar". In: stockholm.vattenochavfall.com

## Case story: Nyborg, Denmark

Using recycled materials at every turn, Upcycle House has reduced its material life cycle carbon emissions by 86% compared to traditional housing. Facades are made from post-consumer paper, insulation from recycled newspaper, wool and plastic, and flooring from glue-free industrial wood boards.



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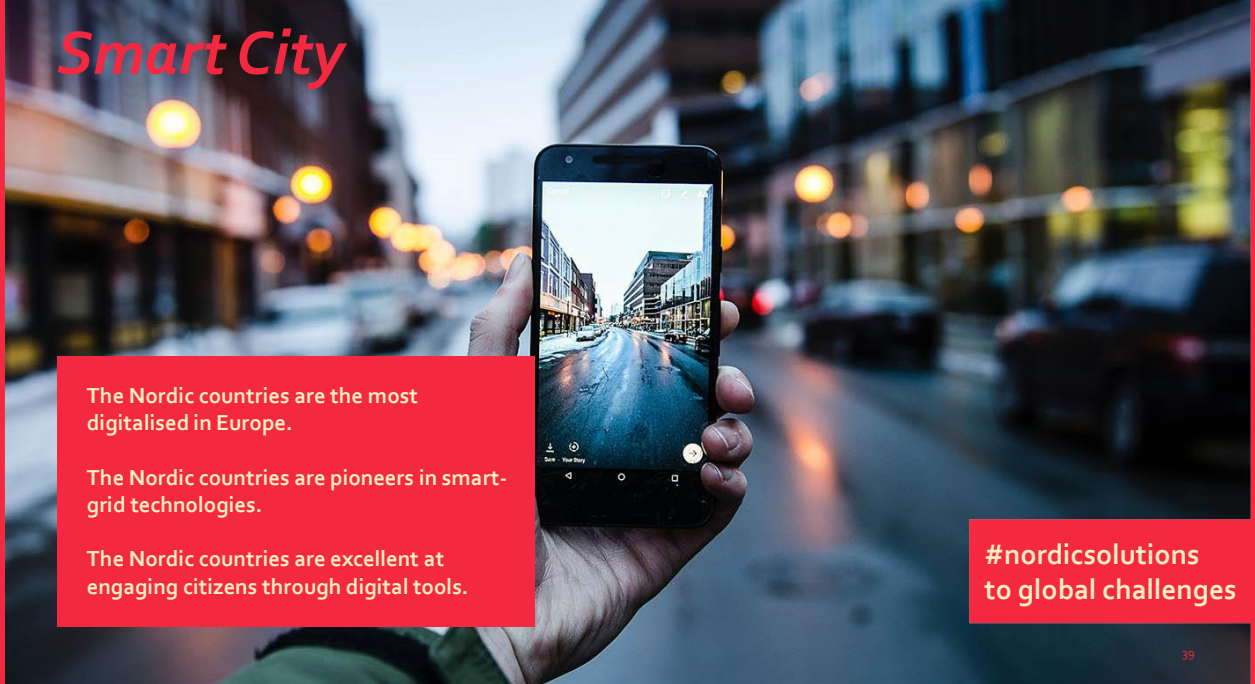
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## Smart City

*Smart technologies  
create opportunities  
for collaboration*



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# Smart City

The Nordic countries are the most digitalised in Europe.

The Nordic countries are pioneers in smart-grid technologies.

The Nordic countries are excellent at engaging citizens through digital tools.

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# Smart City

Stockholm will be the first city in the world with a 5G network in 2018.

The Finnish company PayiQ has developed the world's first cloud-based mobile ticketing solution for public and private urban mobility services.

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## ***Case story: Helsinki, Finland***

Helsinki Air Quality Testbed is the world's first comprehensive city-wide air quality system. The vast range of sensors allow authorities and residents to access real-time air quality measurements. With data available on an open platform, the city hopes for the further development of innovative applications that can improve the quality of life in the city.



## ***Case story: Reykjavik, Iceland***

Smart platforms are key arenas for collaboration between cities and residents. In Reykjavik, the 'Your Priorities' platform hosts residents' ideas on how to improve the city. So far, over 70,000 contributions have been submitted, resulting in 200 projects, including new road connections, parking and children's play areas.



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# Design City

*Human-centric and functional urban design*



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# Design City



Nordic architecture and urban design rests on a strong tradition established by designers, such as Alvar Aalto and Eero Saarinen from Finland and Jörn Utzon and Arne Jacobsen from Denmark.

Contemporary Nordic architects include Snøhetta, originating in Norway, and Bjarke Ingels Group, originating in Denmark.

Nordic countries are renowned for their high craftsmanship in product design, with an attention to detail, quality and use of local materials like wood and metal.

Furniture is Denmark's seventh-biggest export product, with sales of USD 2.2b in 2015.

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1-3. Borges, Luciane Aguiar et al. (2017): "White Paper on Nordic Sustainable Cities". Stockholm: Nordregio, pp. 53  
 4. Walker, Owen (2017): "Making a fortune out of Scandinavian cool" in ft.com

## ***Case story: Copenhagen, Denmark***

Taking inspiration from the Swedish landscape, the space between SEB Banks' two buildings in Copenhagen has been transformed into a multifunctional urban space. Rising from street level, the park area uses trees, grasses, ferns and mosses to create a 'Nordic' feel while encouraging recreation, even providing skateboard-friendly slopes and ledges.



## ***9 Nordic practices - sustainable outcomes***

- 1) Inclusive City
- 2) Healthy City
- 3) Resilient city
- 4) Compact Green City
- 5) Mobility City
- 6) Low Carbon City
- 7) Circular Economy City
- 8) Smart City
- 9) Design City



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***Thank you for  
your attention***



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