Nordic Council of Ministers

POLICY BRIEF

# Nordic Climate Actions:
# **Showcasing scalable solutions aligned with the global stocktake decision objectives**

# Contents



This publication is also available online in a web-accessible version at:
https://pub.norden.org/nord2024-040

# Purpose

The Paris Agreement and subsequent Conference of the Parties of the UNFCCC (COP) have set ambitious targets for net-zero emissions by mid-century. The Nordics have a long history of leadership in decarbonisation, sustainability and innovation, and while there is still much work to be done to achieve net-zero emissions, their current achievements provide valuable insights into effective climate action.

The purpose of this policy brief is to highlight Nordic solutions aligned with the global stocktake (GST) decision, to both support and inspire the Nordic countries and other nations in accelerating action towards 1.5 °C pathways by scaling existing solutions. It's based upon the main project report which identifies and showcases 13 Nordic climate action initiatives across various sectors. All of these climate action initiatives are aligned with paragraph 28 of the GST decision.[1]

These Nordic success stories have been evaluated for their potential to be scaled up and replicated beyond the Nordic region. We hope that this policy brief can inspire actors across sectors in accelerating global action and encourage greater collaboration towards a more sustainable future, paving the way for the broader adoption of effective climate strategies worldwide. This policy brief is part of a project commissioned by the Nordic Working Group on Climate and Air under the auspices of the Nordic Council of Ministers. The main report can be downloaded here: https://pub.norden.org/temanord2024-550

## Global stocktake (GST) decision

Held every five years, the GST is a process to inform Parties to the Paris Agreement on their collective progress against its goals. The first ever GST was completed at the COP 28 UN Climate Change Conference in 2023. As part of the GST decision agreed upon at COP28, Parties recognised that the limiting of global warming to 1.5 °C with no or limited overshoot, requires deep, rapid and sustained reductions of global greenhouse gas (GHG) emissions, reducing emissions by 43 per cent by 2030 from 2019 levels, then by 60 per cent by 2035, and finally reaching net-zero $CO_2$ emissions by 2050.

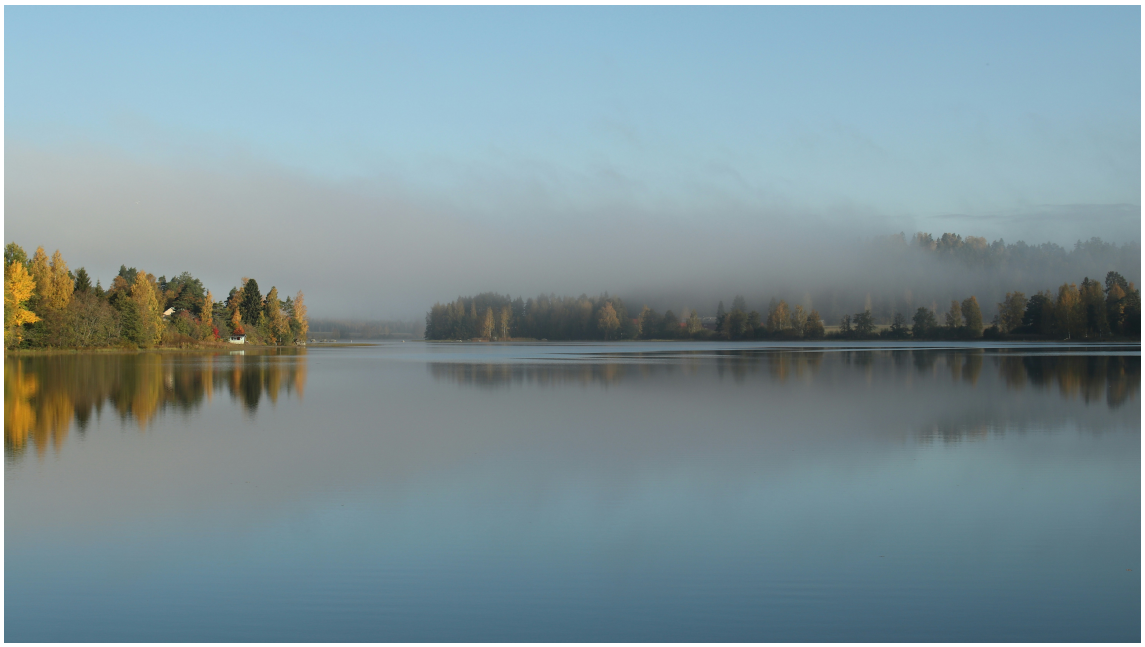
1. https://unfccc.int/documents/636608

The GST decision emphasizes the urgent need for deep, rapid and sustained reductions in greenhouse gas emissions to align with the 1.5 °C target. This applies across key sectors, including energy, industry, transport, agriculture, waste management and others. The decision urges countries to contribute to the following eight climate efforts:

a. Tripling renewable energy capacity globally and doubling the global average annual rate of energy efficiency improvements by 2030;
b. Accelerating efforts towards the phase-down of unabated coal power;
c. Accelerating efforts globally towards net zero emission energy systems, utilizing zero- and low carbon fuels well before or by around mid-century;
d. Transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science;
e. Accelerating zero- and low-emission technologies, including, inter alia, renewables, nuclear, abatement and removal technologies such as carbon capture and utilization and storage, particularly in hard-to-abate sectors, and low-carbon hydrogen production;
f. Accelerating and substantially reducing non-carbon-dioxide emissions globally, including in particular methane emissions by 2030;
g. Accelerating the reduction of emissions from road transport on a range of pathways, including through development of infrastructure and rapid deployment of zero and low-emission vehicles; and
h. Phasing out inefficient fossil fuel subsidies that do not address energy poverty or just transitions, as soon as possible.

# Nordic success stories: Advancing climate solutions for global mitigation

Since 1990, the Nordic countries have reduced their territorial net GHG emissions from 203 million tonnes of $CO_2e$ to 150 million tonnes $CO_2e$ by 2021, which equals a 26 per cent reduction. This has primarily been achieved through large emission reductions within the energy and waste management sector. Still, large reductions are yet to be achieved in transportation, industrial processes and agriculture, which at present account for significant portions of Nordic GHG emissions. Despite efforts since 1990 to reduce GHG emissions, the Nordic region still has significant work ahead to achieve sustained net-zero GHG emissions. All Nordic countries have set long term goals to be climate neutral before 2050.



# Nordic climate action initiatives

The following sections illustrate how selected scalable Nordic climate action cases align with the various global stocktake (GST) decision targets detailed in section 28 of the 2023 GST decision and identifies the sector(s) each case addresses. A more detailed analysis of each case is provided in the main project report.

## Carbon pricing in the Nordics (Cross-Nordic)

**Sector:** Heating & Electricity, Industry, Transport

### Addressed GST

**a, b, c) Renewable energy, Phase-down of unabated coal power, Zero & Low-carbon fuels**

Carbon pricing has contributed to phasing out coal-based power in the Nordics (this also accounts for the EU), largely replacing coal with renewables. Implemented in other regions and with global coherence, carbon pricing would have a significant potential to accelerate efforts towards phasing down coal power, triple renewable energy capacity, and phasing in net zero energy systems well before or by around mid-century.

**g) Reduce road transport emissions**

Implemented in the transport sector, carbon pricing contributes to reducing emissions from transport, although experience shows that reducing transport related emissions also requires complementary policies such as emission standards and blending obligation.

## District Heating: A solution with potential for rapidly decarbonizing heating (Cross-Nordic)

**Sector:** Heating & Electricity, Waste management

**Addressed GST**

**a) Renewable energy**
District heating (DH) can accelerate renewable energy usage in the heating sector in an energy efficient way.

**c) Zero & low-carbon fuels**
By shifting DH production from fossil fuels to renewable energy, Nordic countries are accelerating the transition to net-zero emission energy systems.

**d) Transitioning from fossil fuel energy systems**
DH supports a just and orderly transition away from fossil fuels by providing an efficient, scalable solution for renewable heat in the residential, service- and industrial sectors.

**e) Accelerate zero- and low-emission technologies**
DH accelerates the deployment of zero-emission technologies by incorporating renewable energy in the heating sector, which significantly reduces emissions.

**g) Reduce road transport emissions**
Implemented in the transport sector, carbon pricing contributes to reducing emissions from transport, although experience shows that reducing transport related emissions also requires complementary policies such as emission standards and blending obligation.

# Wind Energy: A pioneer in green transition and community engagement

**Sector:** Renewable energy

### Addressed GST

**a) Renewable energy**
Denmark's wind energy sector plays a crucial role in ensuring universal access to affordable, reliable, and sustainable energy. The country has demonstrated how renewable energy can be economically viable, paving the way for a global transition to sustainable energy sources.

**b) Phase-down of unabated coal power**
The Danish wind energy industry fosters global collaboration through knowledge sharing and partnerships, such as the Indo-Danish Centre of Excellence for Offshore Wind and Renewable Energy. These partnerships help transfer technological innovations and best practices to other countries, supporting global efforts to scale up renewable energy.

**c) Zero & Low-carbon fuels**
The wind energy sector significantly reduces greenhouse gas emissions through its large-scale use of wind power. With over 46 per cent of Denmark's electricity from wind energy and plans to reach 70 per cent by 2030, it contributes directly to global climate goals under the Paris Agreement.

**d) Transitioning from fossil fuel energy systems**
The energy sector promotes a fair transition from fossil fuels by implementing community ownership models and inclusive polices. This approach does not only accelerate wind energy deployment, but also ensures local benefits, supporting the global goal of achieving net zero emissions by 2050.

**e) Accelerate zero- and low-emission technologies**
By actively strengthening global partnerships for sustainable development by sharing its community ownership model and policy frameworks internationally. These efforts contribute to the creation of inclusive, sustainable, and resilient energy systems worldwide, aligning with global efforts to meet sustainable development and climate goals.

## Geothermal district heating

**Sector:** Heating & Electricity

**Addressed GST**

**a) Tripling renewable energy**
By harnessing the Earth's inner heat, geothermal energy contributes to increasing the share of renewable energy in the energy mix.

**c) Accelerate net-zero energy systems**
Renewable geothermal energy can be harvested with virtually no emissions of GHG, thus contributing to the overall goal of net-zero emissions.

**d) Transitioning from fossil fuel energy systems**
Geothermal district heating can effectively decarbonize the energy system by displacing fossil-based heating options.

**e) Accelerate zero- and low-emission technologies**
Expansion of geothermal energy capacity contributes to zero-emission energy supply in several regions of the world.

# Sand batteries: Storing renewable energy to decarbonize heating

**Sector:** Heating & Electricity, Industry


**Addressed GST**

**a) Renewable energy**
The sand battery increases renewable energy capacity by storing surplus wind and solar power, enabling more efficient use and scaling of intermittent energy sources.

**b) Phase-down of unabated coal power**
The technology can replace coal-generated heat with renewable energy, accelerating the phase-down of unabated coal power.

**c) Accelerate net-zero energy systems**
By storing renewable energy for later use, it contributes to the transition toward net-zero emission energy systems by mid-century.

**d) Transitioning from fossil fuel energy systems**
The sand battery supports a just and orderly transition away from fossil fuels by providing a replicable solution for renewable heat production for both housing and industry.

**e) Accelerate zero- and low-emission technologies**
It accelerates the adoption of zero-emission technologies by offering an innovative storage solution for renewable energy, crucial for hard-to-abate sectors like industrial heat.

## Advanced biowaste management systems for reduced emissions and increased circularity

**Sector:** Waste management, Heating & Electricity

### Addressed GST

**f) Reduce methane**

Norway's waste management system combines extensive source sorting with advanced sorting facilities to efficiently recycle biowaste into renewable energy and valuable materials. This reduces methane emissions from organic waste and contributes to generating value in a circular economy through the production of biogas, compost, and recycled materials. By generating both societal value and emission reductions through biowaste management, this case demonstrates an adaptable model that can be utilized by other countries to achieve similar contributions towards GST objectives.

## Rewetting agreements as nature-based climate solutions

**Sector:** Forestry

### Addressed GST

**f) Reduce methane**

Rewetting agreements in productive forests is a cost-effective strategy to reduce greenhouse gas emissions. While rewetting peatlands stops $CO_2$ emissions, it also triggers methane release. Despite methane's potency, recent modelling shows that there are climate benefits of rewetting despite the impact from methane, with long-term contracts ensuring that the emission reductions are sustained over time.

## Land restoration: Driving carbon sequestration and climate resilience

**Sector:** Agriculture

**Addressed GST**

**f) Reduce methane**

20 per cent of Iceland's sheep farmers are participating in this project. They have undertaken an action plan aimed at making sheep products carbon-neutral as soon as possible. The plan focuses on offsetting emissions through topsoil and wetland restoration, forest planting, and adopting renewable energy. These efforts are also helping to reduce methane emissions.

# Climate network of municipalities accelerating emission reductions

**Sector:** Heating & Electricity, Industry, Transport

### Addressed GST

**b) Phase-down of unabated coal power**
By promoting local climate work, renewable energy projects and reducing fossil fuel dependence, the Hinku Network of Finnish municipalities accelerate the phase-down of unabated coal power.

**c) Accelerate net-zero energy systems**
The network facilitates the transition to net-zero emission energy systems through encouraging and supporting local climate action plans and the adoption of low-carbon technologies.

**d) Transitioning from fossil fuel energy systems**
The network enables a just and orderly transition away from fossil fuels by supporting municipalities in scaling up renewables and reducing emissions to meet 2050 net-zero targets.

# $CO_2$ tax on industry

**Sector:** Industry

**Addressed GST**

**c) Zero & Low- carbon fuels**
By implementing a national tax on carbon emissions, Denmark is incentivizing heavy industry to shift to zero- and low carbon fuels. The relatively high tax level ensures that the incentive is strong enough to ensure action, while the recirculation of the revenue supports companies investing in the transition.

**d) Transitioning from fossil fuel energy systems**
Recognizing that the tax will ultimately cause increased costs for households with potentially harmful distributional effects, Denmark has implemented several initiatives to mitigate this and support vulnerable households.

**e) Accelerate zero- and low-emission technologies**
Part of the revenue from the $CO_2$ tax is placed in a green fund to support companies in developing and implementing new, green technologies, as well as a specific fund for investments in carbon capture and storage.

**h) Phase out fossil fuel subsidies**
The green tax reform addresses fossil fuel subsidies by phasing out tax expenditures granting tax exemptions on fossil fuels used in shipping, aviation, and other sectors.

## Policy package to increase sales of electrical vehicles

**Sector:** Transport

### Addressed GST

**g) Reducing road transport emissions**

The policy package is aligned with the objective by implementing consistent incentives, such as tax exemptions and access to bus lanes, alongside substantial investments in charging infrastructure. These measures have made electric vehicles more affordable and appealing, fostering a stable market and accelerating the deployment of zero-emission vehicles. As a result, Norway is on track to significantly reduce transport emissions, demonstrating the effectiveness of clear and consistent policies in achieving the GST goals.

## Green Steel: The transitioning of a hard-to-abate sector

**Sector:** Heating & Electricity, Industry


**Addressed GST**

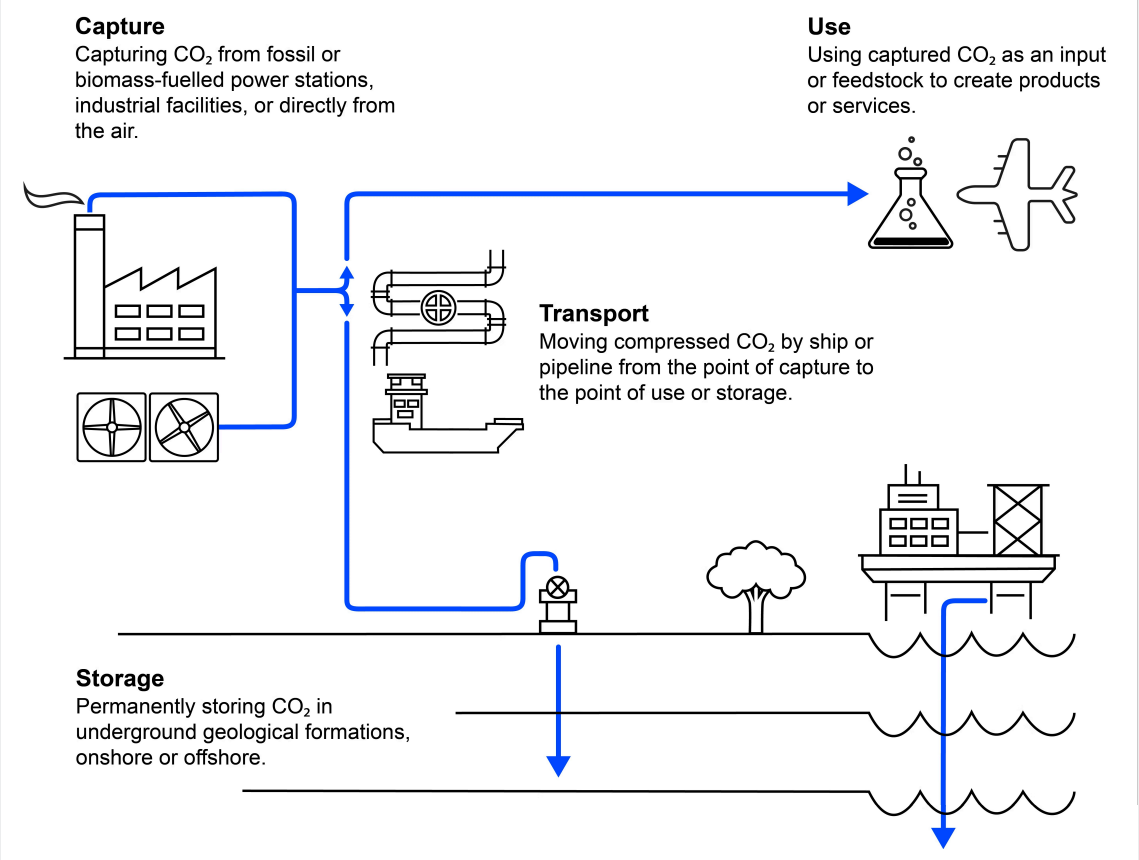
**c) Zero & Low-carbon fuels**
By replacing traditional steelmaking (using coal as a reduction agent in blast furnaces) with Direct Reduced Ironmaking (using Hydrogen as a reduction agent), significant amounts of coal can be replaced by hydrogen. This accelerates efforts in reaching near zero steel production if the hydrogen is produced with renewable energy, such as solar and wind-power electricity.

**d) Transitioning from fossil fuel energy systems**
Replacing coal with clean hydrogen in the steel sector would make a significant contribution to transitioning away from fossil fuels.

**e) Accelerate zero- and low-emission technologies**
This technology offers a pathway to low-emission technologies by using renewables in a hard-to-abate sector and replacing fossil fuels.

## Carbon Capture Storage (Cross-Nordic)

**Sector:** Heating & Electricity, Industry, Transport




**Addressed in GST**

**b) Phase-down of unabated coal power**

CCS can be applied to existing coal-fired power plants to obtain significant $CO_2$ emission reductions.

**c) Net-zero energy systems**

CCS can contribute to net-zero emissions by mitigating emissions from fossil-based energy systems and generating $CO_2$ removal that can counterbalance $CO_2$ emissions that cannot be eliminated, if applied to biomass-energy systems or direct air capture.

**e) Accelerate zero- and low-emission technologies**

Significant expansion of the CCS technology will be required to manage hard-to-abate emissions.

**g) Reducing road transport emissions**

CCS can cater for carbon-lean, or even carbon-negative, fuels for the transportation sector.

# Summary of key insights for advancing climate action initiatives

The world is facing an urgent climate crisis that demands a profound transformation to be completed within the coming decades. Addressing this crisis presents significant challenges, and effective climate action requires comprehensive solutions across all sectors, incorporating both technological solutions and non-technological approaches.

The Nordic countries have made substantial progress across a broad range of sectors by leveraging key enablers to overcome existing barriers to tackling climate change. Despite the many obstacles to scaling climate solutions globally, the Nordics have navigated these challenges and can provide learnings for other regions, in how to set ambitious climate targets ahead of 2050, implement impactful policies, and create an environment that fosters the growth and scaling of innovative climate solutions.

The key insights from these climate action cases provide three key learnings and identify three critical enablers for building the path towards a net-zero future.

## Key learnings

1. It is possible to achieve climate objectives without compromising development objectives through the implementation of well-balanced policy mixes

Since the 1990s, the Nordics have implemented carbon taxes, spurring renewable energy adoption and GHG reductions, especially in heating. Policies such as building standards, green certificates, and car subsidies have also led to energy and cost savings. At the same time the Nordics have managed to maintain sustained economic development, highlighting that ambitious climate targets can be combined with and beneficial for economic development.

2. Developing renewables is good business and beneficial for building resilience in the face of growing geopolitical tensions

The Nordics have demonstrated that low-carbon energy sources can be developed into a sound business case, while simultaneously supporting energy security.

Several examples of successful renewables and enabling technologies such as district heating, wind energy, sand batteries and biowaste management systems implemented in the Nordics can provide scalable and replicable solutions globally.

3. Nature-based solutions offer significant potential for rapid, deep and sustained mitigation

Experiences from the Nordics effectively showcase how nature-based solution have significantly contributed to climate change mitigation. Successful initiatives include the rewetting of peatlands in productive forests, which involved 2,100 hectares and led to reduced emissions by 6,100 tons $CO_2$ equivalents, and the implementation of sustainable land management practices. These strategies have proven to be effective in reducing greenhouse gas emission by enhancing carbon sequestration and improving climate resilience without compromising livelihoods.

## Key enablers

1. Policy mixes, robust over time, are needed for supporting successful implementation of deep, rapid and sustained climate action

Ambitious climate action needs to be based on and supported by comprehensive policies across administrative branches. Polices aiming to promote emission deep, rapid and sustained emission reductions should consider innovation and investment support at an early stage. For example, carbon pricing and subsidies can be used to

scale up new technologies, and standards and regulation to make green products mainstream. The government and other public actors like municipalities can also play an important role in providing relevant infrastructure and support in risk mitigation.

2. Proactively building stakeholder support and local engagement are crucial for ensuring a just rapid transition away from fossil fuels

The Nordics showcase the importance of an inclusive approach to stakeholder engagement and inclusion in climate action and policy development, to build widespread support for ambitious targets. A proactive commitment to build meaningful and genuine stakeholder engagement has helped in addressing concerns related to increasing the ambition of climate policy and ensuring that a transition towards a net-zero economy would be based on wide public acceptance across all Nordic countries.

3. Fostering genuine collaboration across sectors towards shared goals is key to success

The numerous examples of successful cross-Nordic collaborations between nations, industries, regions, and municipalities highlight the importance of building consensus on climate targets and joint action. Many climate action interventions such as geothermal heating-, wind energy, climate network and district heating projects have successfully been scaled and made mainstream through strong partnerships and collaborations between governments, the private sector, local authorities, NGOs and citizens.

# About this publication

Policy Brief

**Nordic Climate Actions: Showcasing scalable solutions aligned with the Global Stocktake decision objectives**

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## Nordic co-operation

Nordic co-operation is one of the world's most extensive forms of regional collaboration, involving Denmark, Finland, Iceland, Norway, Sweden, and the Faroe Islands, Greenland and Åland.

Nordic co-operation has firm traditions in politics, economics and culture and plays an important role in European and international forums. The Nordic community strives for a strong Nordic Region in a strong Europe.

Nordic co-operation promotes regional interests and values in a global world. The values shared by the Nordic countries help make the region one of the most innovative and competitive in the world.

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