Climate and Energy Strategy of Lapland

Executive Summary for Decision-Makers

Co-funded by the European Union

Centre for Economic Development, Transport and the Environment

REGIONAL COUNCIL OF LAPLAND

Introduction

The Climate and Energy Strategy of Lapland is a strategic document included in Lapland's regional development system. One of the objectives of the Lapland Regional Programme— the Lapland Agreement— for the period 2022–2025 has been to mitigate greenhouse gas emissions and safeguard biodiversity. The goal of Carbon-Neutral Lapland by 2035 has been included in the Lapland Agreement, and climate and nature objectives have been developed, for example, with the Lapland Green Deal roadmap.

In the new Lapland Agreement period (2026–2029), the goal remains to reach carbon neutrality by 2035 and to achieve a climate- and nature-positive Lapland, which is partly implemented through The Climate and Energy Strategy of Lapland. Thus, regional development must also take into account the objectives of the climate and energy strategy.

The Climate and Energy Strategy of Lapland iy consists of four strategic plans: the Climate Change Mitigation Plan (aiming at emissions reductions), the Energy Strategy (aiming to guide the energy transition), the Climate Change Adaptation Plan (aiming to anticipate and prepare for climate impacts), and the Climate Communication and Participation Plan (aiming at cooperation).

The strategy has been prepared in an ERDF-funded joint project of the same name, with the Centre for Economic Development, Transport and the Environment (ELY Centre) for Lapland as the main implementer and the Regional Council of Lapland as a co-implementer. More than 90 stakeholders have participated in the work through the steering group or expert groups. In addition, 13 workshops were organised—at least one in each subregion of Lapland— involving more than 200 participants from various backgrounds and organisations. Separate discussions were also held with the Sámi Parliament and the Youth Council of the Lapland wellbeing services county.

The detailed objectives and measures of the strategy are presented in this summary for each plan. The strategy is based on Finland's national Climate Act and its related policy plans. The first target year is 2030, which is why the full evaluation of the strategy is planned for 2032. Measures will be monitored before then, but the next major revision and update of goals and actions toward the 2040 targets will only be carried out in the 2030s.

The strategy was approved by the Regional Board of Lapland on 15 December 2025.

Climate Change Mitigation Plan

The Lapland Climate Change Mitigation Plan implements the climate objectives of the Lappi Agreement and specifies the Lapland Green Deal roadmap regarding climate change mitigation. It describes Lapland's emissions, their development, key emission sources, emission scenarios, and reductions needed to reach targets. It also outlines key measures and provides recommendations for promoting emission reductions.

Lapland aims to carry out inspiring, action-oriented, and encouraging climate work that respects ecological limits and accounts for Lapland's characteristics and resident groups. Lapland seeks carbon neutrality by 2035 and aims to become a Hinku region. Lapland also commits to the targets of the national Climate Act. These form the quantitative mitigation targets.

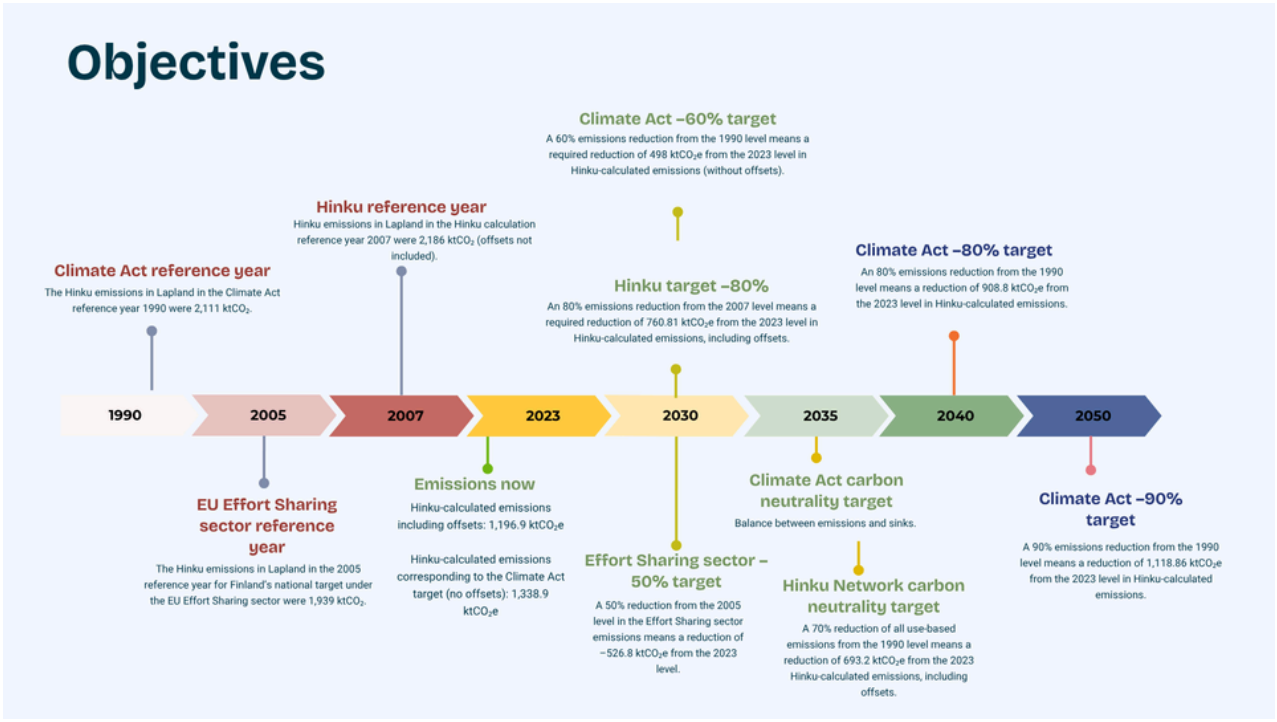

Figure 1 Quantitative and temporal targets for climate change mitigation in Lapland.

Lapland's Emissions

In 2023, Lapland's emissions totalled approximately 1,339 $ktCO_2e$. About one quarter of emissions come from building energy consumption (electricity, district heating, oil heating, and other heating). District heating is the largest single source within this category. Road transport emissions account for another quarter—mostly from passenger car traffic. Just under one quarter comes from agriculture and reindeer husbandry. Emissions from livestock mostly originate from grazing and soil emissions from cultivated land. The remaining emissions come from machinery, waste management, and small-scale industry.
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The emissions presented below, calculated according to the Hinku model, represent those emissions that the regions can actually influence. The Lapland emissions under review therefore do not include, for example, industries covered by the emissions trading system or air traffic, even though these are significant sources of emissions at the Lapland level. These sources of emissions are examined as part of the mitigation plan.

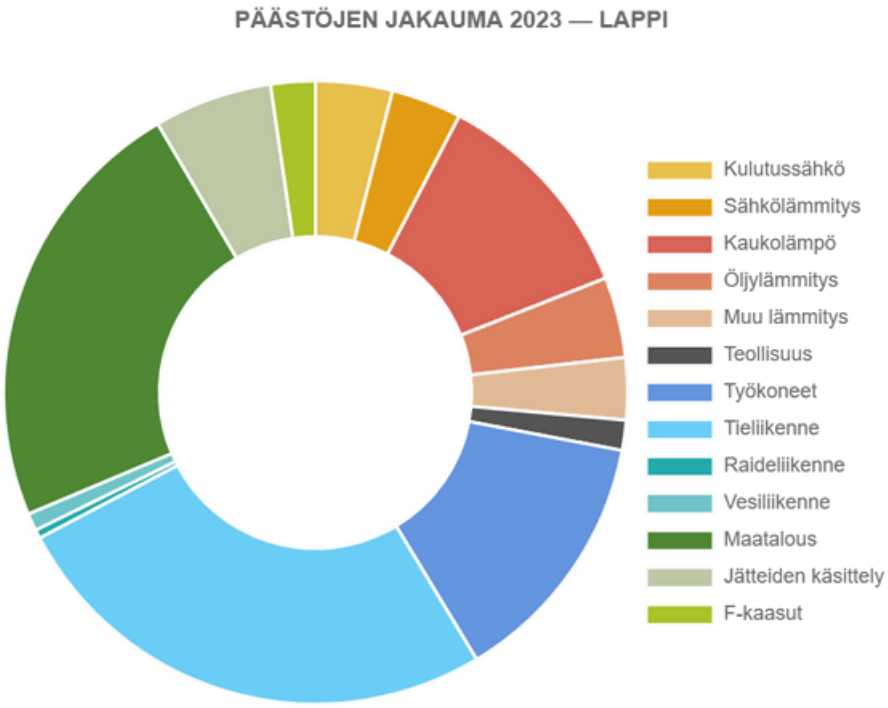

Figure 2 Distribution of Lapland's emissions across emission sectors in 2023 according to the Hinku calculation

Key Measures by Sector

Energy
Changes in district heating sources, improved building energy efficiency, changes in heating systems, increased supplementary heating solutions, waste heat utilisation, and building-specific solar energy systems.

Transport
Reducing vehicle kilometres, shifting to clean propulsion technologies, improving cycling opportunities, smart transport systems, and sharing-based mobility.

Agriculture and reindeer husbandry
Removing low-yield peatlands from cultivation, rewetting, and paludiculture on peat soils.

Carbon sinks
Increasing continuous-cover forestry, lengthening rotation periods, restoring peatlands, forest ash fertilisation, and increasing the share of long-lived wood products.

Reducing carbon footprints
Low-emission procurement, supporting sustainable business transitions, changing consumption habits, and reducing tourism emissions.

Recommendations for Key Actors

Municipalities
Strategic leadership of regional climate work, improving energy efficiency, joining the energy efficiency agreement (JETS), promoting low-emission solutions and clean energy production through land use and zoning, and supporting businesses and residents through communication, advisory services, projects, and cooperation.

Regional Council
Integrating climate goals into regional development, steering and monitoring climate work, supporting municipalities, and promoting climate solutions through zoning, transport system planning, funding, advocacy, and partnerships.

Education and research organisations
Advancing climate and circular economy work through education, guidance, and student collaboration; developing a supportive sustainability environment.

Businesses
Improving energy efficiency, transitioning to low-emission solutions, developing climate-resilient business models, assessing climate impacts in investments, and using tools and guides to support emission reductions.

Energy Strategy

The Lapland Energy Strategy outlines the development directions of the regional energy system based on an analysis of the current state. The strategy lays the groundwork for a coordinated and balanced energy transition aligned with regional, national, and EU-level energy objectives.

It compiles information on Lapland's energy production, consumption, infrastructure, and planned developments. It presents a vision for energy system development and four scenarios extending to 2050, followed by principles and recommendations to guide the energy system's evolution.

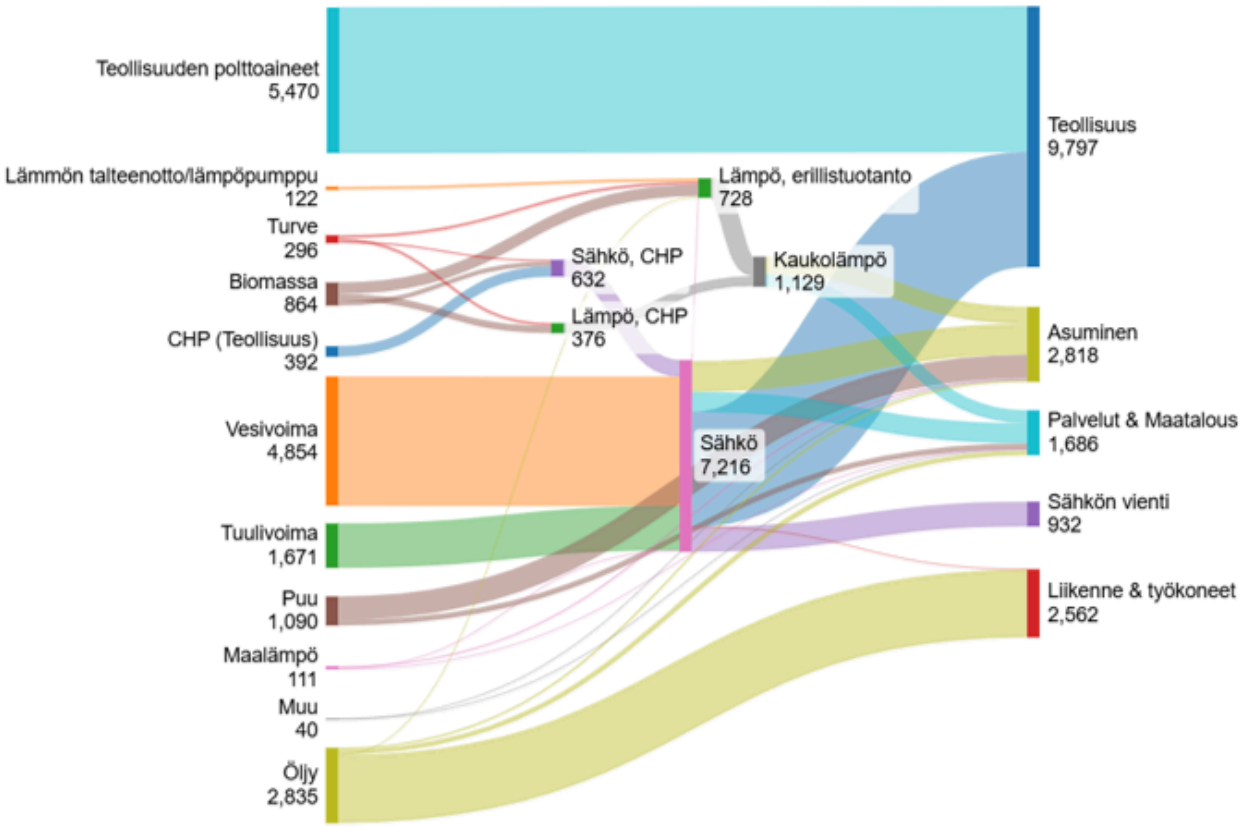

Figure 3 Lapland's energy production and consumption, i.e., energy balance in 2023, GWh (Ramboll Oy). The largest sources of energy production are industrial fuels, hydropower, and oil. By far the largest energy consumer is industry.

Energy System Scenarios

Based on an analysis of the current state of Lapland's energy system and the development outlook of its operating environment, four scenarios extending to 2050 have been created to illustrate possible future developments related to energy in Lapland. The scenarios are:

1) Variable Renewal Scenario
2) Steady Renewal Scenario
3) Regional Transformation Scenario
4) Stagnation Scenario.

The development scenarios evaluate impacts on renewable energy, the hydrogen economy, the regional economy and structure, the environment, and social acceptability. In all scenarios, the share of renewable energy in Lapland's energy production increases to varying degrees, but from the perspective of regional development and vitality, it is essential that energy production can also be refined locally to serve the needs of the business sector.

Vision

The vision for 2050 is

We enable the energy transition in Lapland. We increase added value and diversify the economic structure sustainably for the benefit of local people.

The vision is guided by three strategic objectives: 1) Vitality and positive climate impacts, 2) Social acceptance and coordination, and 3) Biodiversity.

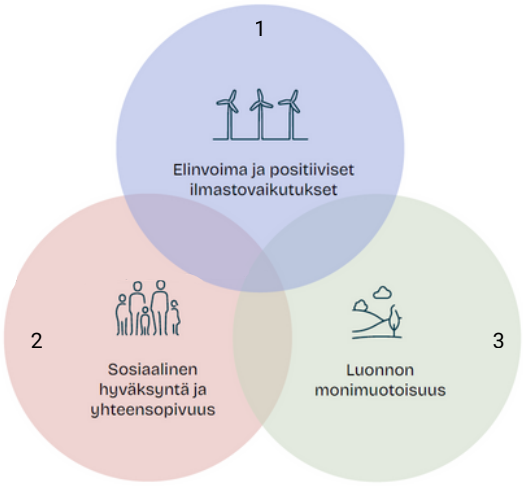

Figure 4 Strategic objectives for developing the energy system: 1) Vitality and positive climate impacts, 2) Social acceptance and coordination, and 3) Biodiversity (Ramboll Oy).

Principles for Developing the Energy System

The goal of the principles is to promote a balanced and well-coordinated energy transition in Lapland.

We lead with knowledge

Improve timely, reliable, and locally relevant data production to support decision-making.

We grow together

Increase value-added processing and promote competence related to local energy production.

We care for others

Consider energy system renewal as a tool for emission reductions and follow the 'Do No Significant Harm' principle.

Key Recommendations

The recommendations aim to support the implementation of the principles and the vision.The measures will be monitored using the qualitative indicators defined in the strategy.

The recommendations are

Develop the energy system through regional land-use planning.

Increase the diversity of energy production to enhance clean energy, reduce sector emissions, increase value-added, and strengthen security of supply.

Improve participation, dialogue, and reliable information sharing in energy projects.

Promote participation of municipalities and public actors in the Energy Efficiency (JETS) agreement (2026–2035).

Strengthen cooperation between municipalities in developing energy industry zones.

Support RDI activities in the energy sector to boost local expertise and expand international project work.

Climate Change Adaptation Plan

The Lapland Climate Change Adaptation Plan assesses climate impacts in Lapland broadly and by sector. Sector-specific measures for preparedness and adaptation are presented. The plan is one of the first regional adaptation plans in Finland.

Vision:

People and livelihoods in Lapland thrive and are prepared for a changing climate.

Objectives:

- Mainstream climate adaptation across Lapland.
- Share climate knowledge and support sectors in adapting to climate change.
- Identify climate risks as part of regional preparedness.
- Safeguard Lapland's cultural and economic characteristics in a changing climate and advance them in national advocacy.

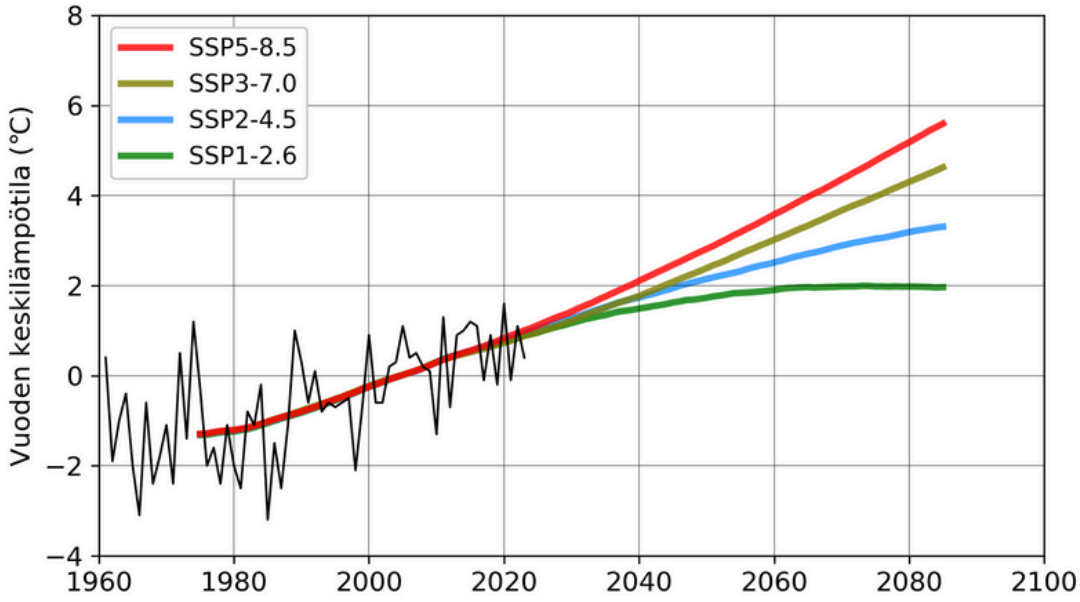

Figure 5 Development of the annual mean temperature across all of Lapland in four climate change scenarios until the end of the century, presented as 30-year moving averages. The better the success in emission reductions, the less the climate will warm.

Climate Impacts in Lapland

The Finnish Meteorological Institute prepared a report for the background of Lapland's adaptation plan on the observed climate change in Lapland as well as the projected future changes according to emission scenarios.

Key findings:

- Lapland has already warmed by approx. 1.3°C since 1961–1990 normal period.
- Future warming depends on global emissions: Lapland will warm by 2–6°C by the end of the century—most likely 3–5°C.
- Winters will change most: shorter snow season, more variability in snow amounts, more winter rain and thaw days.
- Year-to-year and seasonal variability will increase.

Key Climate Risks in Lapland

A climate risk refers to an impact arising from a climatic variable, exposure, and vulnerability. In Lapland, for example, reindeer herders are a vulnerable group who are exposed to the impacts of climate change and are therefore at greater risk than many other sectors. Factors that increase vulnerability may relate to, for example, a person's place of residence, ethnic background, level of education, age, or living conditions.

The impacts of climate change can be divided into direct, indirect, and transition impacts. Direct impacts are related to the climate itself (e.g., heatwaves), indirect impacts are transmitted to Lapland from elsewhere in the world (e.g., migration), and transition impacts are related to emission reduction measures and the effects of the green transition (e.g., land use).

The impacts of climate change on Lapland were assessed during the first half of 2025 in sector-specific workshops across different parts of Lapland. The assessment covered direct, indirect, and transition impacts. The most significant climate risks identified for Lapland in the assessments are listed below.

Direct risks

- shorter snow season & variable snow amounts
- freeze–thaw cycles,
- extreme weather events
- increasing drought
- more precipitation
- invasive species
- rising temperatures and heatwaves.

Indirect and transition risks:

- rising costs (e.g. production inputs)
- impacts on mobility (tourism, migration)
- green transition investments and land-use pressures
- increased demand for local low-carbon goods and services.

Key Adaptation Measures in Lapland

We develop solutions that can be used to assess and prevent the negative impacts of climate change and various land-use projects on the environment, water systems, natural resource sectors, and their adaptive capacity.

We encourage and support sector-specific adaptation planning to prevent sector-specific climate risks and prepare for them.

We promote and develop multifunctional uses of commercial forests that, in addition to supporting the goals of forest owners, also support good conditions in water bodies and forest nature, the climate resilience of forests in a changing climate, reindeer husbandry, recreational use, and carbon sequestration.

We define and jointly assign a responsible actor or actors to coordinate regional climate change adaptation work, develop indicators for regional adaptation work, and launch systematic monitoring of adaptation.

We develop nature-based solutions suited to Lapland and increase related expertise. In adaptation, nature-based solutions are prioritised over grey infrastructure, for example in flood risk and stormwater management as well as in preventing heat island effects.

We continue research and information production related to the impacts of climate change and strengthen climate adaptation expertise in educational institutions, municipalities, businesses, and regional organisations, for example by providing tailored additional and continuing education.

We support municipalities and regional actors in land-use planning in which climate change is taken into account as part of cumulative impacts and climate risks are prevented.

Climate Communication and Participation Plan

Achieving the goals of the Lapland Climate and Energy Strategy requires that the people of Lapland feel that climate issues belong to them. For this reason, strengthening climate citizenship is one of the key strategic objectives in Lapland's climate work, and recognising and developing it is essential for the effectiveness of the strategy. The aim of the measures in the Lapland Climate Communication and Participation Plan is to develop climate communication and promote the participation of Lapland's residents in climate work.

Climate citizenship is defined in the Legitimacy2035 project as follows:
"Climate citizenship describes citizens' opportunities and capacities to participate both in mitigating climate change and in adapting to it. Climate citizenship inherently includes the ability to influence climate policy-making at different levels. This has a direct link to the fairness of climate policy and its perceived legitimacy."

Recommendations

Different population groups are considered in participation activities
People—especially those population groups vulnerable to climate change whose voices have so far received limited attention—are engaged and heard in the planning of climate actions.

Supporting actors in Lapland in climate communication
Actors are encouraged to communicate about their climate solutions. This is supported by strengthening climate communication skills, promoting information production and compilation, and increasing resources for carrying out communication, which requires broad cooperation between municipalities, businesses, and other actors in Lapland.

Promoting climate education broadly
Educational and training organisations are supported and encouraged to incorporate the strengthening of climate citizenship into their activities, and sufficient resources are secured for this work. For example, the goal is to increase the number of educational and training organisations in Lapland that have obtained the Green Flag (Vihreä lippu) certificate.

Bringing storytelling into climate communication
Narrative climate descriptions can be used to illustrate the impacts of climate change based on research. Real stories and examples of climate actions in Lapland—and the people behind them—bring climate work closer to local residents.

Developing the Lapland climate work network
To strengthen the impact of climate work and the participation of different actors, the continuation of the network established during the strategy project is supported. In a functioning network, information flows.

Creating a communication platform for climate work in Lapland
The aim of the communication platform is to gather and make visible the progress of climate actions in Lapland and their monitoring indicators. The platform can support municipalities and other actors in their climate communication when regional climate information is collected in one place.

Strengthening cooperation with the third sector
Grassroots-level actions implemented by associations can lead to concrete measures that also promote climate work at the resident level. The third sector has a significant role in preparing for climate risks.

Including culture and the creative industries in climate communication
Lapland has long traditions of examining the relationship with nature and environmental change through culture and art. The cultural and creative sectors have the potential to help address climate change—an issue that is cross-cutting, chain-reactive, and emotionally complex—in a diverse and experiential way.

Developing methods that strengthen participation
Experimenting with and refining different participation models to make them accessible and suitable for Lapland creates a regional culture of participation that strengthens the fairness of climate actions and the green transition.

Lapin ilmasto- ja energiastrategia

Lapland Climate and Energy Strategy was implemented in a project of the same name from May 1, 2024 to December 31, 2025. The project was carried out by the Centre for Economic Development, Transport and the Environment of Lapland (Lapin ELY-keskus) together with the Regional Council of Lapland (Lapin liitto).

The project received funding from the European Regional Development Fund (ERDF). Its total budget was €486 738, of which €389 391 came from EU funding.

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