Roadmap to Net Zero Carbon 2050

Swedavia Airports

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Preface

At Swedavia, we are working not only on the transformation of our own operations, but also on initiatives that will drive the development of fossil-free aviation.

The airport operation that Swedavia operates under its own auspices is now completely fossil-free. But not everything at an airport is under Swedavia's control. There are many operators at the airport who conduct operations in the airport area.

Swedavia shall be a role model internationally and show that it is possible to operate fossil-free airports. For over ten years, we have worked to convert our own airport operations to fossil free operations. The work has been both extensive and challenging and required a significant level of commitment. Using creativity, curiosity and a willingness to seek new solutions, we reached our goal at the end of 2020. The airport operations that Swedavia conducts in-house at our ten airports are now finally completely fossil-free. We are now continuing to work on making the rest of our airport operations and other ancillary operations fossil-free.

Below is Swedavia airports climate' commitment.

Level 5 Net Zero Commitment Statement

By 2026, Swedavia's ten airports must have reached net zero emission of fossil carbon dioxide in Scope 1[1] and 2. Compared with 2010 baseline, greenhouse gas emissions have been reduced by 90% or more and residual emissions addressed with offset removals, all in accordance with the requirements of ACA5.

Swedavia airports commit to maintaining ≥90 + % GHG absolute reduction in Scope 1 and 2 and achieving Net Zero in Scope 3 by 2050, or sooner, from respective baseline year, aligned with the ISO Net Zero and/or sector Net Zero frameworks or commitments, where applicable, with interim targets/milestones outlined in a Net Zero roadmap. Where no Net Zero sector commitments/frameworks exist, the ISO target applies.

Fredrik Jaresved
Director Strategic Initiatives and Innovation

[1] Scope 1 – emissions are direct emissions from owned or controlled sources. Scope 2 – emissions are indirect emissions from the generation of purchased energy. Scope 3 - emissions are all indirect emissions (not included in scope 2) that are not contained in the reporting company's value chain, including both upstream and downstream emissions.

Introduction

The opportunity to travel contributes to cultural exchange, growth, and improved prosperity in an increasingly globalised and fast-changing world. Today, the access to fast and efficient air travel is crucial for people to be able to meet and for companies to be able to operate in Sweden. The tourism industry has a significant need for a well-functioning aviation system in combination with several modes of transport to improve accessibility and to increase the country's competitive edge.

Swedavia’s aim is to future-proof air travel, and is currently a world leader in the development of climate-smart airports. The company will continue in the same manner in the future. Swedavia is also driving the development of sustainable air transport of the future, where air travel is part of a transport system that generates the least possible impact on the environment and that enables people to travel smoothly and efficiently to, from and within Sweden. Fossil fuels will be phased out.

This roadmap is a compilation of information from Swedavia's Annual and Sustainability Report and Swedavia's strategic direction.

Swedavia's climate work

The aviation industry and the world at large are facing major challenges from a climate and environmental perspective. Swedavia, as a significant and central player in the industry, has taken several initiatives to enable and promote the development of airports and air transport with low climate impact. At the same time as Swedavia strives to develop environmental work at its own airports, Swedavia also contributes to other players in the industry being able to develop their work in their quest to reduce climate impact.

Fossil-free company
Since Swedavia was founded in 2010, the company has worked to reduce fossil carbon emissions and other negative impacts on the environment as a result of Swedavia's airport operations. Swedavia has worked long-term and consistently to eliminate fossil fuels and fossil energy in its own operations. Since 2020, when Swedavia reached its goal of zero fossil carbon emissions in its own airport operations, the company has continued to contribute to the reduction of fossil fuels and fossil energy throughout the value chain.

Fossil-free airports
For Swedavia, this is about cooperation and requirements to ensure that all actors at the airport reduce their emissions in order to achieve as low climate emissions as are practically possible. Swedavia has set requirements for how actors shall use only energy from fossil free resources in order to operate at Swedavia's airports. Since December

2025, all operations that are active within the airports' borders is fossil-free. Swedavia has ensured access to fossil free fuels and charging infrastructure to facilitate the transition of airport operators. By 2030, the transports to and from the airport that Swedavia can influence will be fossil-free. In this way, Swedavia can enable a transition for the transport industry in the regions where Swedavia operates. By 2040, Swedavia will reach net zero emissions from construction and civil engineering.

Aviation's climate transition

Aviation’s climate transition will take place with several different tools. For Swedavia, this means stimulating the use of biofuel. For this, no new aircraft or new infrastructure are needed, instead up to 50 percent Sustainable Aviation Fuel (SAF) is dropped into existing fossil aviation fuel. By using SAF, aviation's fossil carbon dioxide emissions can be reduced by up to 85 percent from a lifecycle perspective. This is a solution that works both here and now.

The next step is to ensure that Swedavia has electricity infrastructure at all Swedavia's airports for the requirement electric aircrafts. As early as 2028, the first commercial flights with electrically driven aircraft could begin. In addition to SAF and rechargeable batteries, the aircraft of the future will also run on hydrogen.

Achieving the vision for fossil-free aviation in 2045 requires both business and technology development, research into new fuels, innovation and new customer offerings. Swedavia has contributed to the 2025 target by purchasing SAF for its own business trips since 2016, and since 2019 Swedavia has coordinated joint procurements with the public sector and the business sector. Swedavia has also implemented an incentive programme wherein airlines can apply for grants for voluntary refuelling of SAF. This is part of Swedavia's efforts to increase demand and availability of SAF.

In order to increase demand and give producers incentives to invest in the production of SAF, more organisations, companies and even the individual traveller need to buy SAF for air travel.

Swedavia's Roadmap to Net Zero Carbon 2050

Definition of Net Zero: companies have reduced their Scope 1 + Scope 2 emissions by at least 90 percent compared to a base year. The base year is up to the organisation. The remaining emissions will be reduced through offset reductions. Swedavia has previously offset the remaining emissions. In addition, the organisation will develop a roadmap to reach zero emissions also within Scope 3. For Scope 1 and Scope 2 the emissions shall be reported as carbon dioxide equivalents (CO_2e), but for Scope 3 we are dependent on how our suppliers and collaboration partners develop their own reports concerning climate-impacting emissions.

The activities below are both activities that Swedavia has great control over, and activities over which we can only try to influence to a greater or lesser extent. Nevertheless, these are activities that are required to achieve the Paris Agreement to strive for no more than 1.5 degrees increased temperature.

Target 2020

Only fossil-free energy is used in our own airport operations.

- Electricity from renewable sources
- Fossil-free fuel for backup power
- Fossil-free heating (including self-produced and district heating)
- Fossil-free operation of vehicles (fossil-free fuel or electric operation)
- Fossil-free fuels for fire drills.

Target 2025

Five (5) percent of all aviation fuel uplifted at Swedish airports is renewable.
All energy used at Swedavia's airports are fossil-free, including all airport operators[2] conducted at the airport itself.

- Only fossil free fuels for airside vehicles.
- Increasing possibilities for charging electric vehicles.
- Sufficient electricity capacity for the airport.
- Only fossil free electricity, heating and cooling for all activities at the airports.
- All ground service operations agreement, operations agreement, security agreements and selected procured agreements clarify the requirement for fossil-free operations at the airport.
- Distinct communication and support for airport operators to facilitate their climate transition.
- Recurrent monitoring of fossil free activities is implemented.

[2] Ground handling companies, cleaning services, catering, fuelling companies, goods reception, snow removal, surveillance, cleaning, etc.

- All Swedavia's airports shall be able to handle electric aircraft.
- Swedish production of renewable aviation fuel takes place with raw materials from forest residues.
- Several commercial production facilities are active, both within and outside Europe.
- SAF is offered as an option with all travel purchases.
- The public sector in Sweden procures SAF to reduce fossil carbon dioxide emissions from business flights.
- Swedavia has a good understanding of the conditions for hydrogen-powered aircraft at airports.
- Airport operators are fossil-free, in terms of SAF, vehicle fuels, heating, cooling and backup power.

Target 2030

Swedavias' use of de-icing chemicals for aircrafts and runways should be produced of renewable raw materials.
Domestic flights shall be fossil-free[3].
Transport to and from Swedavia's airports, which Swedavia can influence, is also fossil-free[4].

- Sufficient production of SAF for the total needs of domestic flights.
- Smaller electric aircraft with up to 30 passengers can begin to be introduced into commercial traffic.
- An international standard for electric aviation has been introduced.
- All Swedavia's airports have infrastructure for electric flights.
- Infrastructure for hydrogen and electrofuels is available at selected Swedavia airports.
- Regulations and division of responsibilities are clarified in hydrogen and electrofuels.
- Easy for customers to do the right thing, for example, climate impact is built into ticket prices.
- Simple and smooth flows at Swedavia's airports where different modes of transport work together.
- Swedavia is working to expand fossil-free public transport.
- As much as possible of the transport of passengers, employees, goods and services to and from the airport is fossil-free.

Target 2035

All use of de-icing and runway de-icing chemicals is made from fossil-free raw materials - even those carried out by our partners.

[3] Goals for the aviation industry in Sweden developed within the framework of fossil-free Sweden.
[4] National transport policy objective

Target 2040

Swedavia’s goal is to achieve 75 % emissions reduction from construction and civil engineering. The goal includes building materials as well as transport and fuel.

Target 2045

All flights departing from Swedish airports shall be fossil-free[5].
Swedavia’s construction and civil engineering operations will have net zero greenhouse gas emissions.

- Sweden has access to sustainable locally produced bio and electrofuel, new technological solutions in the form of electric aircraft with fuel cells or with rechargeable batteries, and innovative customer offerings.
- Rail traffic is linked to Swedavia's international airports.
- Sweden's and the Nordic region's production facilities for biofuel and electrofuel meet Sweden's need for liquid fossil-free fuel, the rest goes to export.
- The airport infrastructure, such as electricity supply, electricity storage, refuelling and fuel storage, is adapted to the increased complexity and the integration of aviation into the travel system.
- Electric aviation is included in the basic range for domestic and regional routes.
- SAF supplies the intercontinental routes.
- The strengthened infrastructure and local production have ensured the availability and growth of aviation in rural areas, thus creating lots of jobs around the country.
- The industry has developed new pricing models, new destinations, and increased opportunities for customers to contribute to the co-creation of sustainable solutions.
- Swedavia’s requirements regarding procured and offered services mean net zero emission of fossil carbon dioxide in the value chain (Scope 3).

Target 2050

All sectors/industries have achieved net zero carbon under the Paris Agreement.

[5] National goal for the Swedish aviation industry, developed within the framework of Fossil-Free Sweden.

Strategic direction, the path to strategic vision 2030

Swedavia's vision describes where we want to be in the future and how we want to be perceived. Our goal is based on our mission, together with opportunities and challenges in the world around us (including our materiality analysis) and describes a situation where we can be competitive and businesslike under the conditions that then will prevail. Swedavia's 2030 target consists of three areas; Future-proof aviation, Simplify door-to-door travel and magical meeting places.

Swedavia's onepager – the summary of our strategic direction

Swedavia's 2030 vision forms the basis for our strategic choices in the strategic direction and is summarised in the following three focus areas. The sub-items describe what we mean by each area in more concrete terms.

An important area for our climate work is to future-proof aviation. It is described thus:

Swedavia’s aim is to future-proof air travel. Swedavia is currently a world leader in the development of climate-smart airports. The company will continue in the same manner in the future. We are also driving the development of the sustainable air transport of the future, where air travel is part of a transport system that generates the least possible impact on the environment and that enables people to travel smoothly and efficiently to, from and within Sweden. Fossil fuels will be phased out.

"Future-proof aviation" includes:

Reduced emissions for aviation and completely fossil-free domestic flights.

- To mitigate climate change, humanity needs to switch to a sustainable energy supply.
- This also applies to aviation. The Swedish aviation industry, together with the government initiative Fossil-Free Sweden, has developed a roadmap for how domestic flights will become fossil-free by 2030 and how all domestic and international flights that depart from Swedish airports will become fossil-free by 2045.
- Swedavia will be a driving force in the work to transform both the airports and air travel itself.

Net zero emissions at our airports

- In 2020, Swedavia became the first airport operator in the world free from fossil emissions in the part of its airport operations that Swedavia conducts under its own management.
- Together with other players at our airports, we will now take the next step and ensure that all operations at the airports reach net zero emissions – that is, that greenhouse gas emissions from operations throughout the value chain are minimised and that the remaining emissions are compensated through quality-assured methods.

Circular business models and zero vision for waste

- By 2030, Swedavia will have a circular business model and a zero vision for waste. A circular business model means that companies take advantage of the value in products and materials through, for example, reuse or industrial collaborations.
- The goal is to reduce the use of raw materials, reduce climate impact and at the same time create profitability. The European Parliament has voted in favour of binding targets for recycling and a fully circular economy by 2050. The Swedish government has also presented an action plan.

Energy hub with efficient energy supply

- Electrification represents a paradigm shift in the transport sector and plays an important role in the climate transition. The development of electrically powered aviation and electrified ground transport to, from and at airports is progressing rapidly.
- By 2030, it is estimated that at least half of the Swedish vehicle fleet will be rechargeable, which places demands on infrastructure and access to renewable electricity.
- Swedavia therefore needs to secure a renewable energy supply for its airports. This may mean a need to produce our own green electricity and to be able to store it, but also continued energy efficiency.