

# Battery

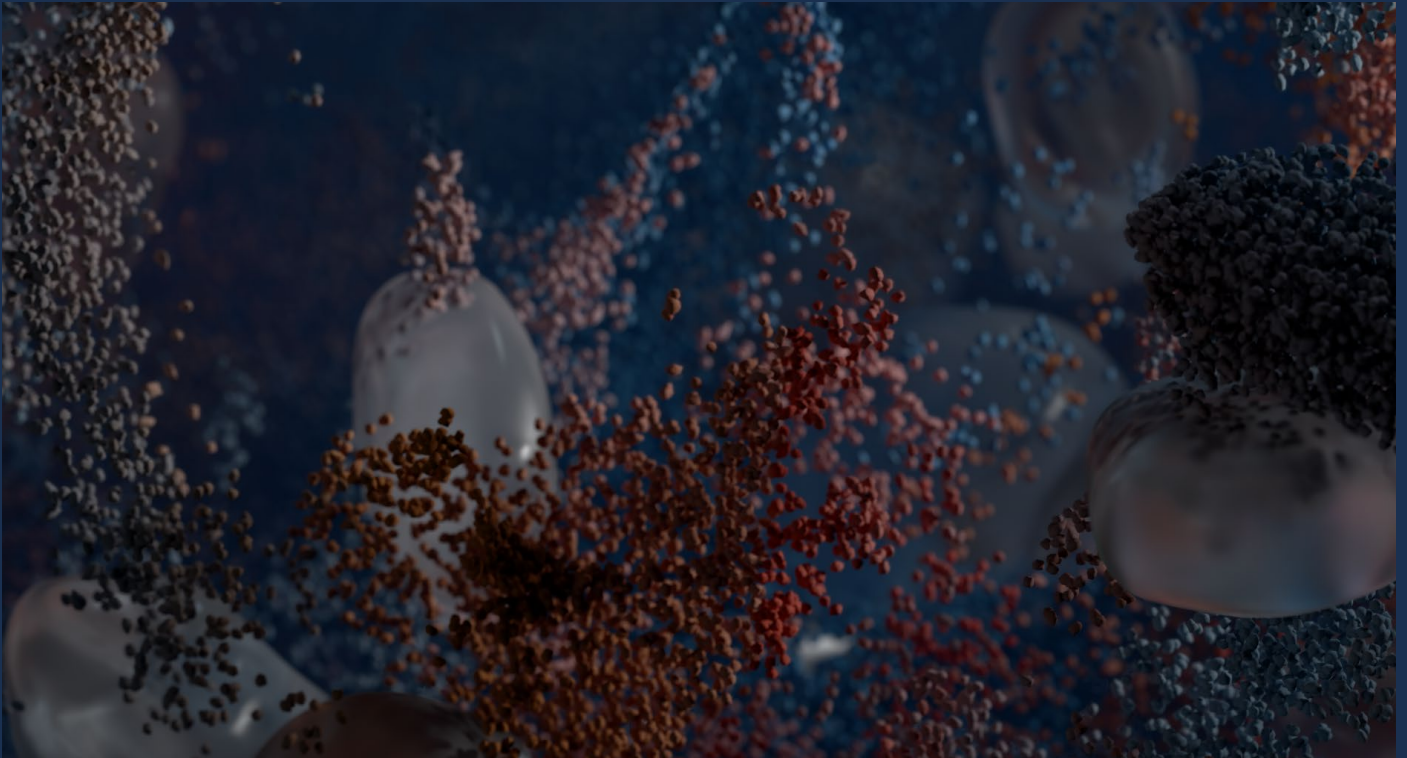


Image: Swedish Insitute

## A generation-defining industry

Mass electrification is required if global sustainability goals are to be met. With transport, industry, and manufacturing all requiring battery solutions to shift from legacy systems to future-proof technologies.

Batteries are key to building a fair and equitable future; Sustainable Development Goal 7 aims to ensure access to affordable, reliable, sustainable and modern energy for all by 2030. Global battery hubs are needed to meet local and regional demand from across industry sectors.

Sweden is at the heart of the Nordic and European sustainable battery transition and aims to be home to Europe's leading sustainable, competitive and innovative battery ecosystem.

Photo: Northvolt



# Sweden's battery ecosystem

Sweden's open, sustainable, and commercially advantageous battery ecosystem, connects local, regional, and global actors to scale production to meet climate goals.

Sustainable battery production in Sweden is being led by industry disruptors, innovative startups, and collaborations with research and academia.

Traditional automotive manufacturers are also playing a critical role in developing sustainable battery technology and solutions.

- Sweden is home to Europe's first gigafactory, owned by Northvolt, a vital actor in both the Swedish and Nordic battery value chains
- Over 100 local, regional, and international companies are currently operating within the Swedish battery value chain
- Sweden's lithium-ion battery supply chain is ranked 8th globally



# Battery sector actors

Sweden's battery ecosystem consists of Swedish and international companies contributing solutions, knowledge, and innovation.

Companies within the battery sector are working together to provide industry and society with green batteries at scale to meet increasing demand.

Below are a few key players in Sweden's battery sector, read more about them and other companies in the comprehensive Company Directory file found on [Sharing Sweden](#).



Photo: Per Pixel Petersson / imagebank.sweden.se

## Altris

A sodium-ion technology company that manufactures batteries for applications, working with strategic partners and has investment from InnoEnergy, Molindo, and Northvolt.

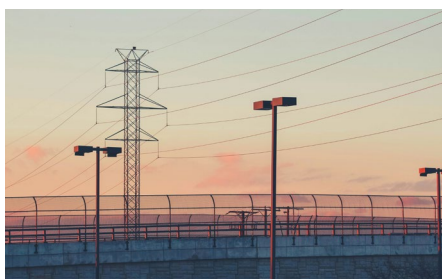


Photo: Unsplash

## Enerpoly

Zinc-ion battery developer and manufacturer, delivering breakthrough affordability in stationary energy storage at the world's first zinc-ion battery mega factory.



Photo: Unsplash

## Graphmatech

A Sweden-based material technology company that invents, develops, and supplies novel materials for sustainable industrial use.



Photo: Northvolt

## Northvolt

Battery manufacturer working with leading automotive companies to develop batteries that have a 90% lower carbon footprint compared to those made using coal energy.

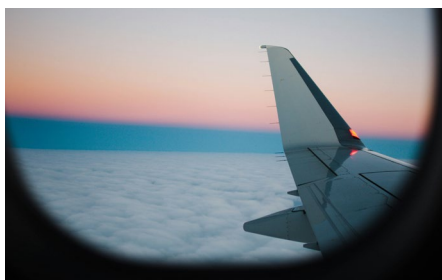


Photo: Unsplash

## PowerCell Group

Manufacturer of fuel cell stacks and fuel cell systems with uniquely high-power density, their products are used in a wide range of industries.



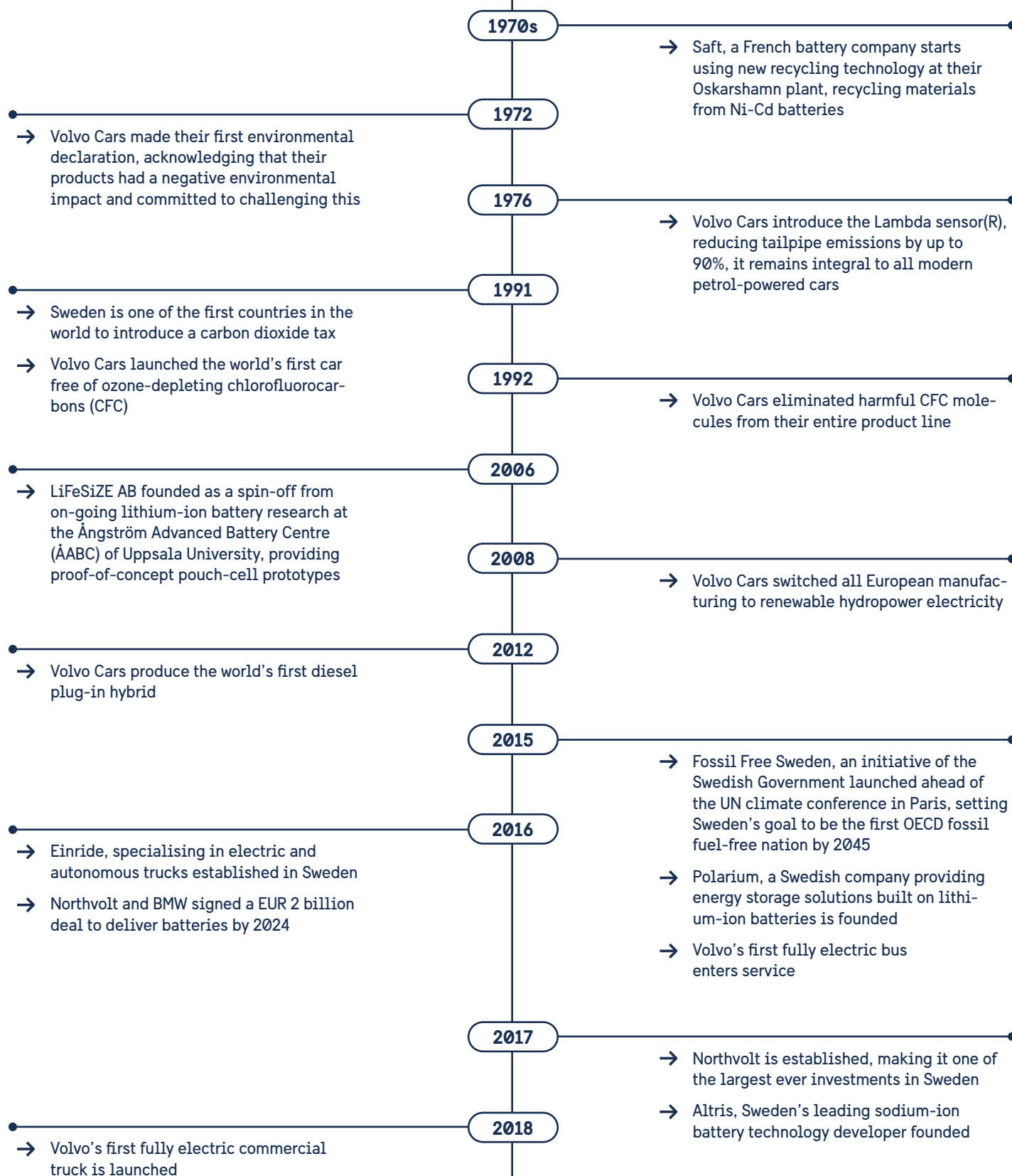
Photo: Sofia Sabel / imagebank.sweden.se

## Volvo Cars

A multinational passenger car manufacturer leading the automotive industry in safety, sustainability, and electrification.



## Milestones in Sweden's battery and automotive history







2019

- Companies including the BMW Group, Volkswagen Group, and Goldman Sachs commit financially to Northvolt
- Volvo Cars produce their first fully electric SUV, the EX40

2020

- Dongjin Power, a South Korean based producer of carbon nanotube slurry is registered in Sweden
- The Swedish government launch a strategy for a sustainable battery value chain
- Scania launched their first commercially available fully electric truck

- Volvo Cars promised to only launch new cars as electric or hybrid, the first major premium brand to offer a plug-in hybrid powertrain on all models
- Volvo Construction Equipment introduces its first electric machines

2021

- Volkswagen Group places a USD 14 billion order with Northvolt

2022

- “Revolt Ett” A giga-scale recycling plant being built with the aim to become the largest battery recycling plant in Europe, capable of recycling lithium, nickel manganese, cobalt and other metals and plastic
- Scania, launched a new heavy truck battery and combined with Foria and Ragn-Sells launching an initiative to accelerate electrified emission-free, heavy road transport
- Epiroc tested the world’s first battery-electric drill rig for surface operations
- Serial production of Volvo’s heavy-duty electric trucks begins
- Scania, together with SCA, develop the world’s first electric timber truck with a capacity of 80 tonnes

- The Nordic Battery Collaboration established, uniting Norway, Sweden, and Finland in building a joint battery ecosystem
- Senior, a Chinese-based separator film producer establish in Sweden
- Volvo Group launches a complete range of electric trucks
- Australian company Sicona enter the Swedish and European markets with a joint venture to produce up to 20ktpa of advanced anode materials
- Volvo Group and SSAB unveil the world’s first vehicle created from fossil fuel-free steel, a hauler

2023

- Volvo begins testing hydrogen-powered electric trucks on public roads

2024

- The Swedish government committed SEK 715 million to be spent over four years on battery research and innovation

- Scania, together with Northvolt, opened their state-of-the-art battery assembly plant in Södertälje
- The Northvolt-Scania battery cell was revealed, produced with fossil fuel-free electricity at Northvolt Ett
- Talga, an Australian mining and active materials company commences construction on an annum graphite anode refinery in Luleå



# FAQ

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## What capacity will Sweden's battery industry have?

The capacity variation will depend on current scale up and other players coming into the market, however projected figures suggest Sweden will increase current capacity and remain in the top ten battery producing countries in the world.

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## Is Northvolt fully operational?

Yes. The first lithium-ion battery cell was assembled in December 2021 and Northvolt Ett delivered its first cells to customers, making Northvolt the first European battery company to make commercial shipments to a carmaker in May 2022. Despite Northvolt's recent challenges, the company remains operational.

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## How many manufacturers of lithium-ion batteries are there in Sweden?

There is a significant number of companies contributing to manufacturing batteries in Sweden. Northvolt is the largest, but other companies including Polarium, Altris, and Enerpoly are advancing technologies. There are additional battery production sites being developed also in Gothenburg and Mariestad.

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## How many companies have invested in Sweden's battery industry?

There are over 100 Swedish and international companies operating within Sweden's battery ecosystem. These are supported by Sweden's leading academic institutes and research and development hubs.

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## How sustainable will Swedish batteries be compared to other countries?

Sweden's battery value chain aims for the carbon footprint of its batteries to be around 90 per cent lower than current industry levels by 2030.

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## What financial incentives are available for companies investing in Sweden?

There are dedicated agencies that provide both Swedish and international companies access to financial support. These are the Swedish Energy Agency, Vinnova – Sweden's Innovation Agency, Almi invest, Tillväxtverket, and Industrifonden.

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## What car manufacturers are working within the Swedish battery sector?

A number of automotive companies have placed orders from battery manufacturers or are actively working with suppliers to develop batteries. These companies include Volvo Cars, Fluence, Scania, Polestar, BMW Group, and Volkswagen Group.

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## How is Sweden sourcing raw materials for sustainable battery production?

Within the mining sector actors are coming together to deliver solutions to be able to sustainably extract the necessary raw materials for battery production at scale. Sustainable mining actors include Svemin, the Association of Mining, Mineral and Metal Producers, LKAB, Boliden, and Talga.



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## What recycling processes are available for lithium-ion batteries?

Recycling and re-use has been built into the Swedish/Nordic battery chain from the beginning. Companies including Fortum, Hydrovolt, Hagal, NorthVolt-Revolt, Boliden, Stena Recycling, Nilar International, Graphmatech, Graphnea, and Evyon are all developing and implementing solutions to reuse materials,

Hydro and Northvolt's joint company Hydrovolt, was launched in 2020 and started operation of the recycling plant in Fredrikstad in May 2022.

In July 2021, Stena Recycling announced an investment of approximately EUR 22.4 million to develop one of Europe's and Sweden's most advanced facilities for recycling batteries. The facility will be near the Stena Nordic Recycling Centre in Halmstad.

A giga-scale recycling plant, Revolt Ett aims to be the largest battery recycling plant in Europe capable of recycling lithium, nickel, manganese, cobalt and other metals as well as plastic and is expected to recycle 125,000 tonnes of batteries per year.

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## What is the Nordic Battery Collaboration?

The Nordic Battery Collaboration is founded on Norway, Sweden, and Finland's shared similarities and comparative strengths across the battery value chain. The three countries work closely together with a joint value proposition which aims to attract foreign direct investments as well as strategic partnerships with OEMs and R&D centres.

Established in April 2021 with a signed agreement between Innovation Norway, Business Sweden, and Business Finland, the Nordic Battery Collaboration's ambition is to jointly work on selected initiatives where the value of acting together is greater than working alone.

In August 2022, the CEOs of the three organisations approved an additional three years of the Nordic Battery Collaboration and plan for a three-year roadmap for 2023-2025.

[View website](#)

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## Why is Sweden working with other Nordic countries?

Sweden is a relatively small, export reliant country and does not have all of the resources to build a complete battery ecosystem. However neighbouring Nordic countries have their own strengths within the battery value chain which complement Sweden. Together, the Nordics are collaborating on key initiatives to leverage raw materials, industry knowledge, and research and innovation.

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## What electromobility companies are based in Sweden?

Progressive electromobility brands including Volvo Cars, Volvo Group, Polestar, Einride, Heart Aerospace, Stena Line, Zeekr Technology Europe, and Novo Energy, and are all headquartered, operate important R&D sites, or manufacture in Sweden.



# About Sweden

In global rankings, Sweden consistently ranks as a sustainability, innovation, and equality leader.

# 1st

**Global sustainability  
competitiveness index**

[View ranking](#)

# 2nd

**Most innovative  
economy**

[View ranking](#)

# 2nd

**Annual glass  
ceiling index**

[View ranking](#)

## Innovation and sustainability credentials

- Sweden aims to run 100% fossil fuel-free energy by 2045
- Sweden is supporting industrial decarbonisation and is home to one of the first major projects for hydrogen-based steel production
- The Swedish government has a target to reduce transport emissions by 70% from 2010 to 2030 and is supporting transport decarbonisation through electrification and biofuels
- Two Swedish companies have developed carbon-free steel. Stegra (formerly H2Steel) and Hybrit, a collaboration between mining company LKAB, energy company Vattenfall, and steel company SSAB
- Ultra-low carbon, 100% circular cement has been developed and piloted by Swedish company Cemvision
- Automotive disruptor Einride have created world-leading digital, electric, and autonomous shipping technology
- Stockholm's public transport network is primarily powered by low-carbon energy: 85% of the commuter and underground rail networks are electric while buses are largely powered by biofuels
- Candela, a Swedish startup, is responsible for developing and launching the world's first electric passenger hydrofoil ferry, cutting route times and emissions
- Sweden has exceptional grid competency with continue investment to meet ongoing demand. Between 2024-2033 approximately 1,500 km of new transmission power lines and 30 new substations will be installed and renewal of over 2,500 km of power lines and about half of the existing 200 substations will be carried out by Svenska kraftnät

## A long history of sustainability leadership and action

- Sweden was the first country to pass an environmental protection act in 1967
- Sweden hosted the first UN conference on the global environment in 1972
- In 1991, Sweden was one of the first countries to introduce a carbon tax, and in parallel continued to grow GDP at a strong rate
- Sweden has an ambitious goal of becoming the first fossil fuel-free OECD nation by 2045
- In 2024, Sweden announced it's position as The Climate Matchmaker, matching climate challenges with solutions across local and regional value chains





# Sweden's support ecosystem

Sweden's support systems provide Swedish and international companies with information and connections to financial support, research and development opportunities, and strategic and practical trade and investment advice.

Here are some of the actors within Sweden's support system.

## Financial

**Swedish Energy Agency**

[Visit website](#)

**Vinnova**

[Visit website](#)

**Almi Invest**

[Visit website](#)

**Tillväxtverket**

[Visit website](#)

**Industrifonden**

[Visit website](#)

## Research and incubation

**RISE**

[Visit website](#)

**Base Batteries Sweden**

[Visit website](#)

**SISP**

[Visit website](#)

**Ignite**

[Visit website](#)

**KTH Royal Institute of Technology**

[Visit website](#)

**Lund University**

[Visit website](#)

**KAW**

[Visit website](#)

## Invest and export

**Business Sweden**

[Visit website](#)

**Almi Invest**

[Visit website](#)

**Swedish Energy Agency**

[Visit website](#)



Photo: Henrik Trygg / imagebank.sweden.se



# Team Sweden

Team Sweden is a network of government agencies and other actors primarily focussed on promoting Swedish exports and investments in Sweden. The aim of Team Sweden is to strengthen collaboration and efficiencies based on each organisation's expertise and resources, through working groups that cross sectors, regions, and countries.

## Swedish Institute

The Swedish Institute is a public agency that builds interest and trust in Sweden around the world. They work with Sweden promotion, cooperation in the Baltic Sea region, and global development.

## Media Assets

Find all assets related to the Swedish Institute at [sharingsweden.se](https://sharingsweden.se)

## Sweden on social media





## Almi

Almi Invest makes investments in the early stages of a startup. When the entrepreneurs want to raise capital to develop their business, Almi quickly assesses whether venture capital is the best option or if they should be funded directly.

[Visit website](#)

## Business Sweden

Business Sweden is jointly owned by the Swedish state and the Swedish business sector with a mandate and mission to help international companies gain access to the Swedish market and help domestic ones utilise it as a platform for expansion.

[Visit website](#)

## Embassies

Sweden has diplomatic relations with almost all States in the world. It has embassies and consulates in around half of these. Sweden's foreign representation consists of approximately 100 missions abroad and 350 honorary consulates. Embassies provide information about travelling or moving to Sweden, as well as information about doing business with or in Sweden.

## Enterprise Europe Network

The Enterprise Europe Network (EEN) helps businesses innovate and grow on an international scale. It is the world's largest support network for small and medium-sized enterprises (SMEs) with international ambitions. The Network is active worldwide, bringing together experts from member organisations that are renowned for their excellence in business support.

[Visit website](#)

## Export Credit Agency (EKN)

EKN (Export Credit Agency) is both a business partner and government authority tasked with promoting Swedish exports and the internationalisation of Swedish companies, by insuring companies and banks against the risk of not getting paid.

[Visit website](#)

## Regional investment promotion partners

Sweden's regional investment promotion partners help international companies invest, establish, and expand in Sweden. They offer services on a local, regional, and national level to identify business opportunities. There are 18 regional partners across Sweden.

## Swedish Agency for Economic and Regional Growth (Tillväxtverket)

The Swedish Agency for Economic and Regional Growth (Tillväxtverket) is a government agency under the Ministry of Climate and Enterprise. The agency works across three policy areas: enterprise policy, regional development policy, and rural policy. One of their primary tasks is helping to ensure that EU funds are invested in projects that promote regional growth and employment.

[Visit website](#)





## Swedish Chambers of Commerce

The Swedish Chamber of Commerce has offices in many countries worldwide. They offer guidance for doing business in Sweden, which rules and agreements are in place as well as general information about Swedish business.

[Visit website](#)

## Swedish Energy Agency (Energimyndigheten)

The Swedish Energy Agency (Energimyndigheten) works with the promotion of energy efficiency measures and investments in renewable energy technologies. They are responsible for leading society's transition to a sustainable energy system.

[Visit website](#)

## Swedish Export Credit Corporation (SEK)

The Swedish Export Credit Corporation (SEK) is a state-owned organisation that finances Swedish exporters, their subcontractors, and international customers. They strengthen the competitiveness of Swedish exports, with a vision to make the world more sustainable through increased Swedish exports.

[Visit website](#)

## Swedfund

Swedfund is the development finance institution of the Swedish state, with a mission to combat poverty by investing in and developing sustainable business in the world's most challenging markets. They work in combination with business, organisations, and authorities across the entire investment cycle.

[Visit website](#)

## Vinnova

Vinnova is Sweden's innovation agency, with a goal to open the way for innovation that provides sustainable solutions and strengthens Swedish competitiveness. They support collaborations and provide funding for projects that bring together cross-sector and cross-boundary partners.

[Visit website](#)