



UK Science  
& Innovation  
Network



## UK Science & Innovation Network Country Snapshot:

# Sweden

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### The Swedish Science & Innovation Landscape

Sweden, despite a population of just 10 million, is recognised as a world leader in scientific research, development and innovation (RD&I). Sweden is widely recognised for its excellent higher education system and open, excellent and attractive research system. It has seen positive growth in international scientific co-publications and non-EU doctorate students (EU Innovation Scoreboard, 2019). Sweden boasts five of the world's top 200 universities in 2020 according to the Times Higher Education and Shanghai university rankings, with Karolinska Institute, Uppsala and Lund universities at the forefront. The country's excellence in industrial research has been developed in parallel through leading technical institutes with strong industry-links, such as Chalmers Technical University, KTH Royal Institute of Technology and RISE research institute.

Sweden has also been progressive as an early technology adopter and has defined itself as a test-bed for new and disruptive innovation. Sweden is ranked as Europe's most innovative country on the 2021 European Innovation Scoreboard, and ranked second on the 2020 Global Innovation Index. Sweden's capital Stockholm is now Europe's third largest tech hub, surpassed only by London and Paris, with the highest number of "unicorns" (i.e. start-up valued over \$1bn) per capita in the world after Silicon Valley, with global successes such as Spotify, Klarna, iZettle, Skype and Voi.

Over the last decade, Sweden has ranked among the world's leading countries in terms of RD&I intensity (total intramural R&D expenditure as share of GDP), which was 3.41% in 2019 (Statistics Sweden, 2021). The country's impressive RDI is largely a result of significant government investment to R&D and strong private sector R&D investment (accounting for almost 72% of all investment) from a number of large international corporates (e.g. Volvo Group, SAAB, ABB and Ericsson). These investments, together with government procurement, has laid the groundwork for today's strong business climate in Sweden, as well as the adoption of new technology among its citizens.

Sweden's innovation strategy is set out every four years in its Research & Innovation Bill, which provides the framework for RDI priorities and activities, and outlines the overall budget. The science and innovation strategy is implemented by the country's RDI funding bodies and research agencies, which include the Swedish Research Council VR for basic research, the Swedish Government Funding Agency for Innovation System, VINNOVA for applied research, alongside a host of other public and private institutes.

## **Health & Life Science**

Sweden is home to the internationally renowned medical research university Karolinska Institute, the world's most foremost synchrotron radiation source at the MAX IV Laboratory, the European Spallation Source (the world's most powerful neutron source) that is currently under construction, and the European Centre for Disease Prevention and Control (ECDC), which in concert have attracted some of the leading life science researchers and experts to the country. Sweden also boasts Northern-Europe's most dynamic life science market. The country is a life-science hub for innovation with just under 3000 companies in the sector, which includes leading market players such as AstraZeneca, Swedish Orphan Biovitrum (SOBI) and Elekta. Not surprisingly, the life science sector is regarded as a national priority by the Swedish government, which recently established an Office for Life Science within the Government Office which is responsible for the country's national life science strategy.

## **Climate change and net-zero**

Sweden is among the world's most progressive countries when it comes to setting ambitious climate policies (net-zero emission by 2045) and the government has embedded sustainable development at the heart of its industrial strategy. Sweden is home to some of the world's leading climate and environmental think tanks and research institutions including the Stockholm Environment, Stockholm Resilience Centre and the Stockholm International Water Institute, which are at the forefront in the research into climate risks and adaptation/resilience and environmental conservation. The global network of sustainability experts, Future Earth, also has one of its European Hubs based in Stockholm. Sweden is widely known as an innovation leader in areas of renewable energy and net-zero innovation, as the country ranks 3<sup>rd</sup> on the Global Cleantech Innovation Index (Cleantech Group). Sweden has built a strong industry around the net-zero transition of the transport sector with businesses such as the sustainable lithium-ion battery maker Northvolt, EV-manufacturer Polestar and Volvo Group at the forefront. Sweden is also trailblazing in the development of fossil-free steel through the R&D project HYBRIT, as a result of partnership between the energy utility Vattenfall, steel-manufacturer SSAB and LKAB mining company.

## **Digital Economy**

Sweden is among the world's leading digital economies and the largest market place in the Nordic-Baltic region for ICT technologies and services. Sweden continues to top the country ranking on the 2020 Network Readiness Index and 4<sup>th</sup> on the Global Connectivity Index, where the country has been a high-scorer in recent years on ICT, bandwidth and 4G investments, as well as Fibre2Home and cloud computing. Sweden has a strong consumer market and is widely recognised as an early adopter of new technology, with many of the world's leading ICT companies carrying out R&D in the country (e.g. Intel, Google, Apple, Microsoft, Samsung, EA, Huawei, Facebook etc) and a place of origin for many of the world's most successful tech companies, such as Spotify, Skype, Mojan, King.com, iZettle and Klarna. Sweden is also at the forefront in the use of e-Governance and has achieved a considerable level of digital maturity of its public sector, due progressive digitalisation efforts in the past, as well as culture of

transparency and consensus (OECD). Chalmers Technology University is also leading the Wallenberg Centre for Quantum Technology which is a 12-year SEK1 billion research programme that sets out to place Swedish research industry at the forefront of quantum technology development and shore-up Swedish expertise.

### **Recent and ongoing SIN work in Sweden**

SIN Sweden is currently working with Swedish and UK innovation agencies to host knowledge-sharing and partnership building meetings between UK and Swedish innovators, industry actors and policy makers around the electrification of transportation in the autumn of 2021.

SIN Sweden is currently working with Swedish life science actors to host a seminar on UK funding instruments and regulatory landscape in the area of health and life science that will take place later in 2021.

In May 2021, SIN Sweden partnered with Business Sweden to support the UK and Swedish Offices for Life Science in hosting a bilateral workshop on genomics and personalised medicine to help inform collaboration between the two countries.

In 2020, SIN Sweden worked closely with UK and Swedish organisations to build the evidence base and needs assessment for an international collaborative platform to support market design and regulations for smart-grid technology that was launched this year under the International Energy Agency's Technology Collaboration Programmes.

Over the last two years, SIN Sweden has helped establish a collaborative network between health and environmental psychologists, behavioural scientists and engineers across the UK and Sweden to help inform policy and strengthen research on behaviour change for a net-zero transition.