



Barriers to commercialisation in the Nordic countries



Foreword

How do we become more competitive? Ever since the publication of the Draghi report in late 2024, the question has ricocheted around European capitals. In the Nordic countries, part of the problem lies in commercialisation: too many would-be innovators find it too hard to bring their new solutions to the market, and too many fail to make the jump from starting up to scaling up.

This report helps us understand why this happens, and what we can do about it. The authors synthesise available data to provide a clear overview of what we know about barriers to commercialisation in the Nordic region. Beyond this, they also identify tools that have been proven to work, sparking ideas for further action at both the national and the Nordic level.

The report also fits into a wider Nordic context. Later this year, the Nordic Council of Ministers will publish a broad-based study of competitiveness in the Nordic region. By going in-depth on a key part of the competitiveness issue, the report on commercialisation barriers serves as a clear complement to that work. Even on its own, however, the report now in front of you holds tremendous value, not least since it will allow Nordic Innovation as well as other interested parties to develop new activities that help make Nordic markets more dynamic, resilient, and integrated.

I am grateful to Menon Economics and the consortium partners for all their hard work in putting this report together. As we at Nordic Innovation continue our efforts to catalyse sustainable growth among Nordic businesses, the insights provided here will be of vital importance.

Sindre Stemshaug Bornstein
Managing Director, Nordic Innovation

Oslo, June 2026



Preface

Menon has, on the behalf of Nordic Innovation, identified and analysed the barriers to commercialisation in the Nordic countries.

Jonas Erraia has been the project manager. Erika Karttinen, Ada Lunde and Jorid Hoel have been project members, and Leo Grünfeld has been the quality assurer. Menon has acted as lead partner for a Nordic consortium consisting of Juho Nyman and Tommi Ranta from MDI, Kai Böhme from Spatial Foresight and Grétar Thór Eythórsson (Professor in PoSci at University of Akureyri).

We thank Nordic Innovation for an exciting assignment. Further, we thank all our informants for contributing to the study.

Jonas Erraia

Project manager, Menon Economics

May 2026



About

Menon Economics

Menon Economics analyses economic challenges and provides advice to businesses, organisations, and government agencies. We are a consultancy operating at the intersection of economics, policy, and market. Menon combines expertise in economics and related disciplines, including cost-benefit analysis, economic valuation, industrial and competition economics, strategy, finance, and organisational design. We apply research-based methods in our analyses and collaborate closely with leading academic institutions across a range of disciplines. Read more about our work at menon.no.

MDI

MDI is a Finnish consulting agency and part of FCG Finnish Consulting Group. MDI has strong expertise in multi-stakeholder collaboration between public and private organisations, as well as in economic and innovation policy at national, regional, and local levels. Its work also covers evaluation and knowledge-based management. MDI carries out approximately 150 assignments annually, ranging from evaluations of public administration to the preparation and operationalisation of strategies and development plans, as well as the creation of monitoring and evaluation models and the production of analytical and insight-driven research. MDI has a broad understanding of regional and urban development in Finland and across Europe.

Spatial Foresight

Spatial Foresight (www.spatialforesight.eu) is a private consultancy and independent think tank in the area of European territorial policies and research, with the main office in Heisdorf (Luxembourg) and branch offices in Berlin (Germany) and Paris (France). Its fields of activity bring together territorial development and policy processes with foresight oriented approaches. Foresight encompasses a range of approaches that combine strategic analysis, prospective forward thinking and process oriented dialogical work. Using these approaches for the processes shaping our territories will facilitate a better understanding of how to best capitalise on territorial development potentials.

Nordic Innovation

Nordic Innovation is an organisation under the Nordic Council of Ministers that promotes innovation, entrepreneurship, and competitiveness in Nordic businesses. Nordic Innovation acts as a catalyst and enabler in the Nordic Prime Ministers' 2030 Vision by bringing together forces across sectors, borders, and disciplines to drive solutions that create lasting change and value.

Contents

Foreword	2
Preface	3
About	4
Summary	6
1 Introduction and background	7
1.1 Background	7
1.2 Scope and delimitations	8
2 Analytical framework	9
2.1 Definition of commercialisation	9
2.2 Data sources	13
2.3 Selection of barriers	14
3 Status for research and commercialisation in the Nordic countries today	15
3.1 High level of research and development in the Nordic countries	15
3.2 Variable commercialisation outcomes	21
3.3 Greenland, the Faroe Islands and Åland	23
4 University and research system barriers	24
4.1 Weak commercialisation incentives	25
4.2 Weak entrepreneurial culture in academia	29
5 Financial and capital barriers	32
5.1 Lack of early-stage risk capital	33
5.2 Fragmented financing systems	37
5.3 Lack of specialised capital and investors	38
6 Market size and human capital barriers	39
6.1 Small domestic markets	40
6.2 Lack of commercialisation competence	41
6.3 Talent concentrated in dominant industries	42
7 Regulatory and governance barriers	45
7.1 Fragmented and difficult-to-navigate public support systems	46
8 Summary and recommendations	49
8.1 Strong research, weaker commercialisation outcomes	49
8.2 Where can Nordic cooperation add value?	52
8.3 Recommendations for Nordic Innovation	54
References	55

Summary

This report analyses barriers to commercialisation in the Nordic countries and assesses where Nordic-level cooperation can help ameliorate these problems. The purpose is to identify and synthesise the most important systemic challenges that limit the transition from research to market, and to provide recommendations for how Nordic Innovation and other stakeholders can support commercialisation across the region.

The analysis is based on a combination of a literature review, quantitative indicators and semi-structured interviews with key actors across the five Nordic countries. Together, these sources provide a basis for identifying barriers that are consistently observed across countries and stages of the commercialisation process. This study builds on a large existing body of research on commercialisation barriers in the Nordic countries. Our study mainly synthesises findings from previous studies and refines, tweaks and updates them with input from stakeholder interviews.

Overall, the report identifies four main categories of barriers:

1. **University and research system barriers** relate to weak commercialisation incentives and a weak entrepreneurial culture in academia, which limit development of the potential pipeline of commercially oriented projects.
2. **Financial and capital barriers** reflect the lack of early-stage risk capital, fragmented financing systems and limited availability of specialised investors.
3. **Market size and human capital barriers** stem from small domestic markets, limited demand, and a shortage of commercialisation competence and scaling experience, reinforced by talent concentration in dominant industries.
4. **Regulatory and governance barriers** include fragmented and difficult-to-navigate public support systems and policy uncertainty, which increase complexity and reduce predictability for both firms and investors.

These barriers are interconnected and, in some cases, create self-reinforcing dynamics. Weak incentives in academia reduce the flow of potential projects; fragmented financing and lack of capital limit their progression; and small markets and limited skills availability constrain scaling. Fragmented support systems further increase transaction costs and reduce the effectiveness of available instruments.

Many of the underlying barriers are linked to national policy frameworks, institutional structures and market conditions. Common for all these is that they cannot be resolved at the Nordic level alone – and in some cases not at all. In the report we distinguish between barriers which are purely national and those with a transnational element. When moving on to the recommendations, we identify areas where Nordic cooperation can play role. The report identifies a role for Nordic Innovation as a *match maker*. By connecting ventures with commercialisation expertise, specialised investors and relevant partners across borders, Nordic Innovation can help better utilise existing resources in the region.

Introduction and background

1.1 Background

Nordic Innovation is implementing the Nordic Prime Ministers' Vision 2030 through the programme Innovative Solutions for 2030. The aim of the programme is achieving the 2030 vision of making the region the most sustainable and integrated region in the world.¹ The Innovation Solutions programme is focusing on three innovation areas: *1) using new solutions; 2) commercialisation and market introduction; and 3) accelerating sustainable circular economy, bioeconomy and resource management.*

This report is related to the second focus area of the programme, namely commercialisation. The aim is to produce and synthesise information on barriers to commercialisation in the Nordic region. Further, the report provides recommendations on how Nordic Innovation can support commercialisation across the Nordic region, and how Nordic-level cooperation can add value beyond national measures.

The urgency of this challenge is well documented in recent European policy analysis. As stated in the Draghi report on EU competitiveness, barriers such as fragmented markets, regulatory complexity, insufficient risk capital and weak demand-side mechanisms limit the ability of new technologies to reach and scale in the market, despite high levels of research activity and public support for innovation.² Commercialisation barriers do not arise uniformly across the innovation process. They cluster at specific points in the journey from research to market, and their nature, severity and underlying causes differ depending on where in that journey an innovator is located. The Draghi report identifies Europe's core challenge not as a lack of research capacity, but as a failure to translate innovation into commercialisation, noting that innovative companies are hindered at every stage of the scaling process by a combination of regulatory, financial and market-related obstacles.³ The European Investment Bank (EIB) frames Europe's lack of industrial dynamism as stemming from weaknesses along the full innovation lifecycle, beginning with obstacles in the pipeline from innovation to commercialisation and extending to the regulatory and jurisdictional hurdles that prevent companies from reaching scale.⁴ Understanding which barriers operate at which stages, and why, is a precondition for designing interventions that address root causes rather than symptoms.

1 Nordic Innovation, Innovative Solutions for 2030. Read April 27th 2026. Available [here](#).

2 Draghi, M. (2024). "The Future of European Competitiveness: A Competitiveness Strategy for Europe". European Commission. Available [here](#).

3 Draghi, M. (2024). "The Future of European Competitiveness: A Competitiveness Strategy for Europe". European Commission. Available [here](#).

4 EIB (2025). Investment Report 2024/2025: Innovation, integration and simplification in Europe. Available [here](#).

1.2 Scope and delimitations

In this report, we analyse commercialisation barriers across five Nordic countries, covering Denmark, Finland, Iceland, Norway and Sweden. The Faroe Islands, Greenland and Åland are included as part of the Nordic region in the Nordic Prime Ministers' Vision 2030, which forms the overarching framework for this report. As the scope of the available literature and comparative data does not extend systematically to these territories, they are not included as separate entities in this analysis.

The analysis distinguishes between barriers that are shared across the Nordic region, barriers that are primarily country-specific, and barriers that arise from cross-border fragmentation. We also seek to provide recommendations on how Nordic Innovation can support commercialisation across the Nordic region, and how Nordic-level cooperation can add value beyond national measures. The study covers both research-based commercialisation pathways, where the starting point is an academic or institutional discovery, and firm-led pathways, where innovation originates within companies. While sector-specific barriers are noted where relevant, the main analytical framework is organised around barrier type rather than sector or country. Given the mandate of Nordic Innovation and the scope of the programme Innovative Solutions for 2030, particular attention is paid to barriers that are relevant for green and circular solutions, though the findings are broadly applicable across technology-intensive sectors.

This study builds on a large existing body of research on commercialisation barriers in the Nordic countries. Our study mainly synthesises findings from previous studies and refines, tweaks and updates them with input from stakeholder interviews. Our focus has been on identifying the most important and recurring systemic challenges across the region. In addition, the analysis is oriented towards what these challenges mean for Nordic-level cooperation, including where joint efforts can add value beyond national measures. We therefore emphasise cross-border and common issues and do not aim to provide a complete review of country-specific policies or all sector-level barriers.



Analytical framework

Our analytical framework is based on combining the technical and a commercial aspect of commercialisation, drawing on established concepts from the literature and operationalised through the TRL and CRI frameworks. Together, these provide a structured way of analysing barriers to commercialisation. In this study we focus on the middle stages of this process, capturing the phase from technology validation and demonstration to initial commercial deployment. The analysis of barriers to commercialisation is based on a combination of literature, quantitative data and stakeholder interviews, which together provide the empirical foundation for identifying key barriers to commercialisation in the Nordic countries.

2.1 Definition of commercialisation

There is no single universally accepted definition of commercialisation in the academic literature, and the concept is understood differently depending on context and perspective. In the management and entrepreneurship literature, commercialisation is understood as a broad process spanning the full journey from idea to market. Datta et al. (2015) describe it as a combination of entrepreneurial activities beginning with idea generation and ending with a product or service launch, while Markman et al. (2008) describe it as encompassing transfer activities such as joint ventures, licensing agreements and the formation of start-ups.^{5,6} In the university-industry relations literature, the concept is often defined more narrowly: Perkmann et al. (2013) define commercialisation specifically as intellectual property creation and academic entrepreneurship, distinguishing it from the broader concept of academic engagement with industry.⁷ Jagusiak-Kocik and Janasik (2023) offer a synthesis, describing commercialisation as the transfer of knowledge, ideas and research results from research laboratories to the market, through direct forms such as licensing and the sale of intellectual property rights, and indirect forms such as the establishment of new companies.⁸

To structure the analysis, we use two complementary frameworks to map the commercialisation pathway from idea to revenue through commercial product: the Technology Readiness Level (TRL) and the Commercial Readiness Index (CRI). Used together, they capture both the technical and the commercial dimensions of the journey from research to market as discussed by ARENA (2014).⁹

5 Datta et al. (2014). Understanding commercialization of technological innovation: taking stock and moving forward. Available [here](#).

6 Markman et al. (2008). Research and Technology Commercialization. Available [here](#).

7 Perkmann et al. (2013). Academic engagement and commercialisation: A review of the literature on university-industry relations. Available [here](#).

8 Jagusiak-Kocik, M and Janasik, M. (2023). "Commercialisation of Research Results – Overview of Assumptions and General Definitions". Available [here](#).

9 ARENA (2014). "Commercial Readiness Index for Renewable Energy Sectors. Available [here](#).

Technological Readiness Level

The TRL was originally developed at NASA in 1974 and has since been adopted across European research and innovation policy analysis as a standard tool for assessing and communicating the maturity of technologies.^{10,11} The European Commission formally introduced the TRL scale in Horizon Europe 2020 as a uniform metric for assessing progress across different projects. The scale has nine steps and describes the progression from the observation of basic scientific principles to a system proven to work in an operational environment, see Figure 2-1. The nine steps are explained in Table 2-1.



Figure 2-1: The 9 steps in the TRL scale. Source: NASA¹²

Table 2-1: Description of the steps on the TRL scale. Source: NASA (2023)¹³

TRL 1	Observation of basic scientific principles, meaning the earliest stage at which fundamental properties of a potential technology are identified and reported.
TRL 2	Formulation of a technology concept, where potential applications are identified but no experimental proof yet exists.
TRL 3	Experimental proof of concept, where active research and initial laboratory studies begin to validate the concept.
TRL 4	Technology validation in a laboratory environment, where the basic technological components are integrated and tested.
TRL 5	Validation in a relevant environment, where the technology is tested in a setting that resembles realistic operating conditions.
TRL 6	Demonstration of the technology in a relevant environment, representing a significant step toward full system development.
TRL 7	System prototype demonstration in an operational environment.
TRL 8	System that is complete and qualified.
TRL 9	The actual system proven in an operational environment.

The TRL scale provides a structured assessment of technological maturity and technical risk and is widely used by public research funders across the Nordic countries to determine eligibility for different funding instruments and to track the progression of research projects. However, the TRL scale focuses exclusively on technical development and does not assess market conditions, business models, regulatory environments or commercial viability.¹⁴ A technology can reach TRL 9 and still face substantial barriers to commercialisation.

10 NASA (2023). "Technology Readiness Levels". Article dated September 27th, 2023. Read April 29th, 2026. Available [here](#).

11 ARENA (2014). "Commercial Readiness Index for Renewable Energy Sectors. Available [here](#).

12 NASA (2023). "Technology Readiness Levels". Article dated September 27th, 2023. Read April 29th, 2026. Available [here](#).

13 Ibid.

14 ARENA (2014). "Commercial Readiness Index for Renewable Energy Sectors. Available [here](#).

Commercial Readiness Index

The CRI was developed by the Australian Renewable Energy Agency (ARENA) to complement TRL by capturing the commercial and market dimensions of technology maturity that TRL does not address. According to ARENA, the CRI was created because new technologies entering markets typically face a multi-faceted range of commercial barriers during the commercialisation process that the TRL framework alone does not capture. The CRI has six steps and describes the progression from a technology that is commercially unproven to one that has become a bankable asset class¹⁵, see Figure 2-2. The six steps are explained in Table 2-2.



Figure 2-2: The 6 steps in the Commercial Readiness Index (CRI). Source: ARENA (2014)¹⁶

Table 2-2: Description of the steps on the CRI scale. Source: ARENA (2014)¹⁷

CRI 1	Hypothetical commercial proposition where the technology is technically ready but commercially untested and unproven.
CRI 2	Commercial trial stage involving a small-scale first-of-a-kind project.
CRI 3	Commercial scale-up driven by specific policy support and emerging debt finance.
CRI 4	Stage where multiple commercial applications are becoming evident, with verifiable technical and financial performance data in the public domain, though still requiring government support.
CRI 5	Widespread deployment driven by market competition in the context of long-term policy settings.
CRI 6	Bankable asset class where the technology is treated on the same terms as mature technologies by capital markets.

Each CRI level can be assessed across multiple indicators including regulatory environment, stakeholder acceptance, technical performance, financial proposition, industry supply chain and skills, market opportunities and company maturity. This multidimensional structure makes the CRI particularly useful for identifying what type of barrier is most binding at a given stage, and therefore what type of intervention is most likely to be effective.¹⁸

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

Combination of TRL and CRI

Used in combination, TRL and CRI provide a richer picture of the commercial readiness of an innovation than either framework offers alone. Based on ARENA, most of the CRI scale is after the TRL has ended, as illustrated in Figure 2-3. The combination makes explicit that technological maturity and commercial maturity do not always advance in parallel, and in this study, we see that the gap between them is where many of the most significant commercialisation barriers arise.

In this report, we focus on the middle stages of the commercialisation sequence, broadly corresponding to the transition from TRL 4 to TRL 8 and CRI 1 to CRI 2, covering proof of concept through to initial commercial scale-up. In practice, this includes activities such as validating a technology in relevant environments, developing prototypes and pilot projects, establishing a viable business model, securing early customers, and building the initial commercial organisation. It also includes efforts related to intellectual property strategy, early-stage fundraising, and forming partnerships with industry or public actors to test and deploy solutions.

The very early stages of basic research, broadly TRL 1 to 3, are outside our primary scope. These stages typically involve fundamental research, scientific discovery and early laboratory work without a defined commercial application. The latter stages of scale-up, broadly CRI 4 to 6, are similarly outside the primary scope of this study. These stages include activities such as large-scale market expansion, international growth, and full industrialisation of production. However, stages on both the left and right sides of the scale surrounding our main focus provide important insights for the analysis of commercialisation. Where relevant, we address these stages and their implications.

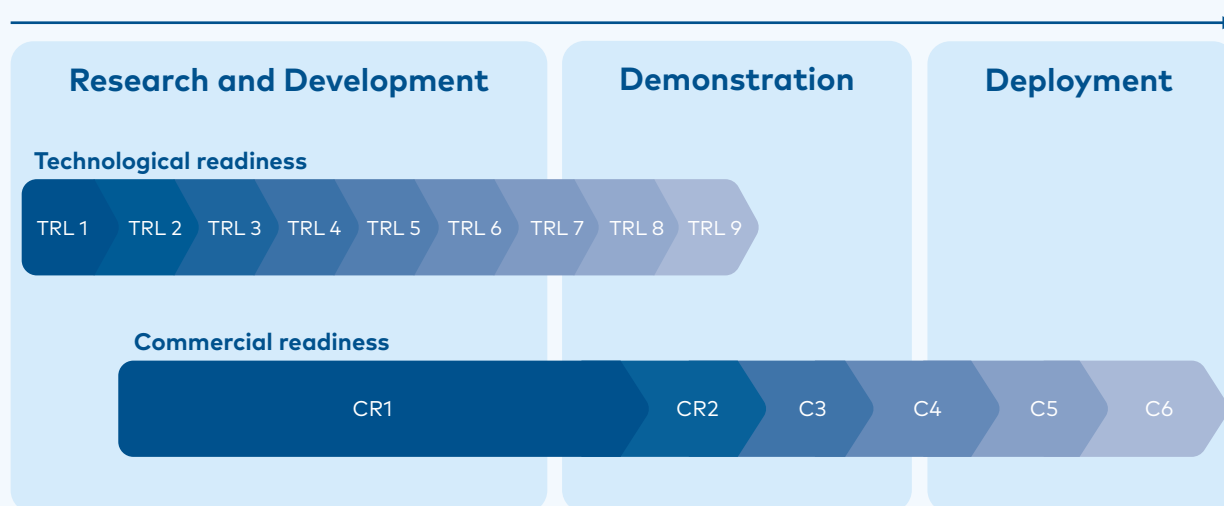


Figure 2-3: TRL and CRI mapped on the Technology Development Chain. Source: Arena (2014) Figure 2¹⁹

¹⁹ Ibid.

2.2 Data sources

Our analysis draws on three main sources of evidence. The first is a targeted **literature review** of 66 documents, covering peer-reviewed articles, national government reports, OECD reviews, European Innovation Scoreboard data, EIB investment reports and the Draghi report on European competitiveness.

The second is selective use of **quantitative indicators** from the European Innovation Scoreboard 2025, European Patent Office (EPO) patent data, OECD databases and national venture capital and innovation statistics.

The third is a series of **semi-structured interviews** with key actors across the five Nordic countries, listed in Table 2-3. Semi-structured interviews in this context mean that informants were provided with an interview guide in advance, outlining the main topics and questions to be discussed. At the same time, the format allowed for flexibility during the interviews, enabling respondents to emphasise the issues they considered most important and to introduce additional topics not explicitly covered in the guide. This approach ensured both comparability across interviews and the ability to capture context-specific insights and emerging themes.

The interviews covered three main areas. First, informants were asked to describe their role in the innovation and commercialisation system and which parts of the commercialisation process they have the most experience with and insight into. Second, the interviews explored perceived barriers to commercialisation, including the most significant system-level challenges, differences between research-based and firm-led commercialisation pathways, and the underlying structural mechanisms behind these barriers, such as financing gaps, regulatory complexity, market fragmentation and demand-side weaknesses. Third, the interviews addressed the role of Nordic cooperation, including the extent to which barriers are national or shared across countries, and where Nordic-level initiatives could realistically reduce barriers beyond what can be achieved through national measures alone.

We selected the interviewees to reflect a broad cross-section of the Nordic innovation and commercialisation ecosystem, including representatives from public agencies, research and technology transfer organisations, investors, industry actors and policy experts. The selection is aimed to ensure coverage across different stages of the commercialisation process and across both research-based and firm-led pathways.

Table 2-3: Overview of interviews by each country

Country	Completed interviews
Norway	SINTEF TTO, NTNU TTO, Innovation Norway, Fairsight, Travers
Sweden	Vinnova (x2), Business Sweden, Norrlandsfonden, Novatron Fusion
Denmark	Innovation Fund Denmark, DTU Skylab, DTU Entrepreneurship, Saltfoss Energy
Finland	Business Finland (x2), Aalto University, Tesi, two start-up companies within manufacture of food products and manufacture of computers, electronic and optical products.
Iceland	Audna TTO, Business Iceland, University of Akureyri, Drift EA.

2.3 Selection of barriers

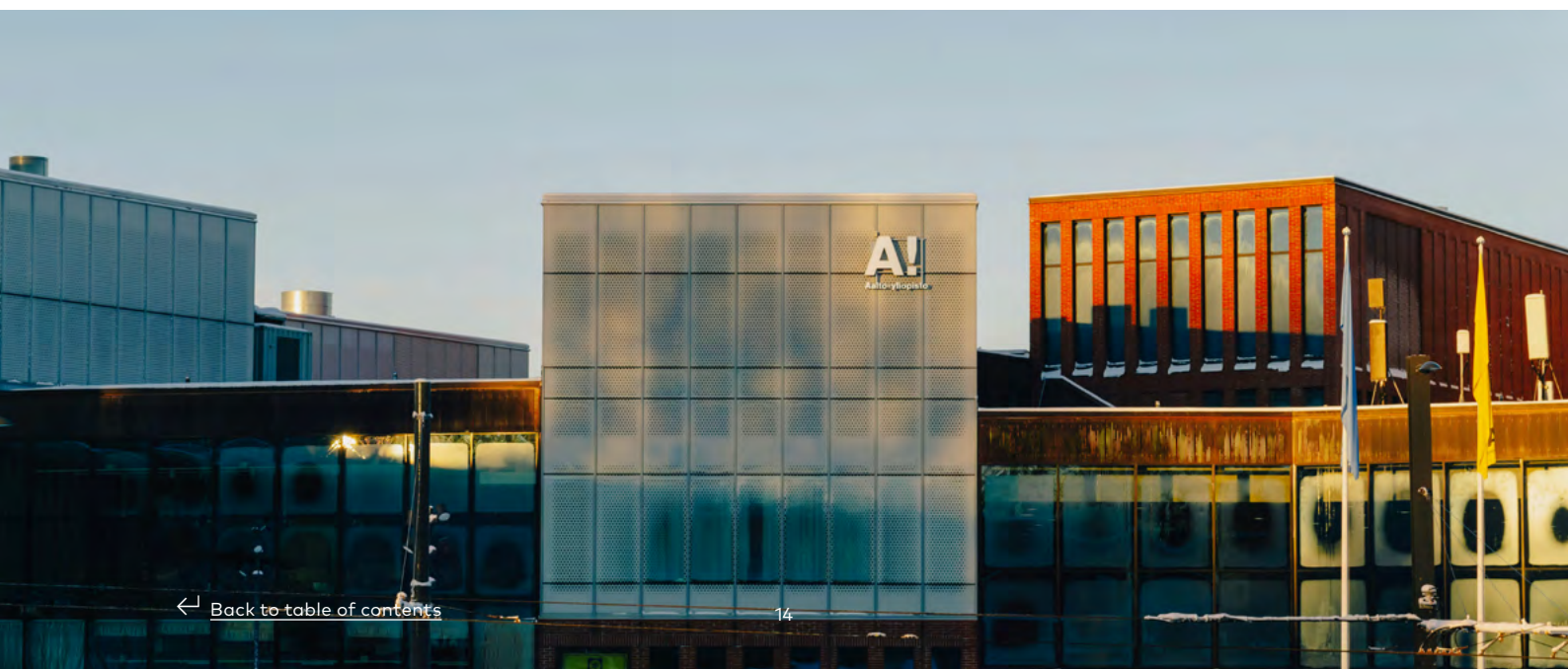
Based on the data sources, we have identified a set of key commercialisation barriers across the Nordic countries. The identification is based on a combination of the literature review, data analysis, and insights from stakeholder interviews. The purpose has not been to compile an exhaustive list of all possible barriers, but rather to identify those that are most consistently observed across sources and that appear to have systemic importance for commercialisation outcomes.

In selecting which barriers to include, particular weight has been given to those that (i) are mentioned across multiple countries, (ii) are identified by several types of actors, and (iii) are described as binding at critical stages of the commercialisation process, especially in the transition from technical validation to early market entry. Barriers that are highly sector-specific or limited to individual countries are included where relevant but are not our primary focus.

Given the overlap and interlinkages between many of the identified challenges, the barriers have been structured into four main categories: (i) university and research system barriers, (ii) financial and capital barriers, (iii) market size and human capital barriers, and (iv) regulatory and governance barriers. This categorisation is analytical and developed for the purpose of this study. While it is not directly derived from a single established framework in the literature, it reflects recurring themes across both academic studies and policy reports, as well as how stakeholders themselves tend to describe the challenges.

The grouping should be understood as a way to organise complex and interrelated issues rather than as strictly separate areas. In practice, many barriers cut across categories. For example, difficulties in accessing capital are often linked to perceived market risks, which in turn may be shaped by regulatory uncertainty or lack of demand-side instruments. Similarly, challenges within the research system, such as limited commercial competence, may interact with both financial and market barriers. The categories therefore serve primarily as a structuring tool to support analysis and communication.

Finally, the categorisation also reflects the overall objective of the report, which is to assess where Nordic-level cooperation may add value. As such, emphasis is placed on barriers that are either shared across countries or where coordination, knowledge sharing or joint initiatives could realistically contribute to mitigation, even where the underlying causes are rooted in national systems.



Status for research and commercialisation in the Nordic countries today

The Nordic countries rank among the world's leading innovation economies, with high levels of research investment and strong innovation systems. However, despite strong performance on research and innovation inputs, the region is less successful in translating knowledge into scalable companies and commercial value creation. This reflects a broader European challenge, where the Nordic countries, despite outperforming many EU peers, still lag behind global leaders such as the US and China in the race for technological leadership.

3.1 High level of research and development in the Nordic countries

The Nordic countries rank among the most innovative countries in the world. In the Global Innovation Index 2025 (GII 2025), published by the World Intellectual Property Organisation (WIPO) covering 139 economies, Sweden ranks 2nd, Finland 7th, Denmark 9th, Norway 20th and Iceland 24th.²⁰ All five countries thus place within the global top 25, and Sweden leads all EU member states, see Table 3-1. This is confirmed by the European Innovation Scoreboard (EIS), where the Nordic countries rank among the top performers on research inputs. Sweden ranks first in the EIS 2025, Denmark second and Finland fourth, all classified as strong innovators. As we shall see in this report, however, there is a persistent gap between innovation inputs and commercial outputs.²¹

Table 3-1: Global Innovation Index 2025 rankings, selected countries

Source: WIPO²²

Economy	GII rank	Score
Switzerland	1	66
Sweden	2	62.6
United States	3	61.7
Republic of Korea	4	60
United Kingdom	6	59.1
Finland	7	57.7
Netherlands	8	57
Denmark	9	56.9
China	10	56.6
Germany	11	55.5
France	13	53.4
Norway	20	49.2
Iceland	24	47

20 WIPO. (2026). "GII 2025 at a glance". Available [here](#).

21 European innovation scoreboard (2026). Accessed April 30th 2026. Available [here](#).

22 WIPO. (2026). "GII 2025 at a glance". Available [here](#).

The GII measures both investment patterns, technological progress, adoption rates and socioeconomic impacts that affect the innovation climate in each country. The spread across the Nordic countries, where Sweden ranks at 2nd globally to Iceland at 24th, indicates that there are important differences between the countries. A natural starting point for understanding these differences is investment in research and development (R&D), one of the most fundamental drivers of innovation performance across countries. Figure 3-1 shows R&D expenditure as a share of GDP for the Nordic countries, the EU and the OECD average.

Sweden, Finland and Denmark all invest above 3 percent of GDP in R&D, well above both the EU average of 2.15 percent and the OECD average of 2.70 percent. Iceland falls close to the OECD average at 2.62 percent. Even though Finland has a high share of R&D to GDP, it falls short of its own goal of 4 percent by 2030.²³

Norway is a clear outlier among its Nordic peers at 1.85 percent, the only Nordic country below both reference averages and far from the Norwegian government's own 3 percent target. However, measured per capita and adjusted for purchasing power parity Norwegian public R&D expenditure was the third highest in the OECD in 2023.²⁴ This reflects that Norway's GDP is dominated by petroleum, where the share of GDP to value added is low.

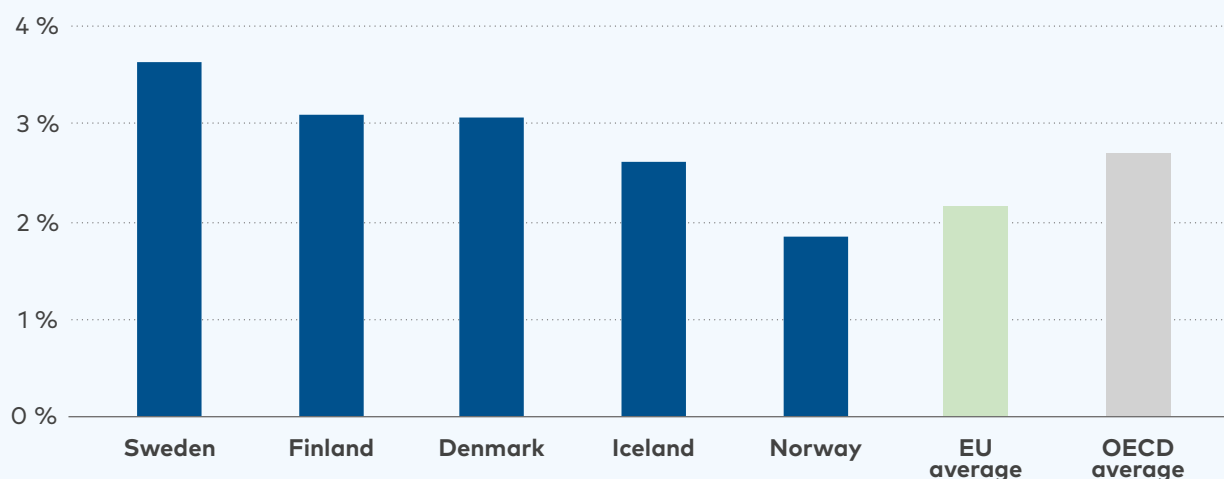


Figure 3-1: R&D expenditure as a share of GDP. 2023. Source: OECD²⁵

23 State Treasury (2025). The national plan to raise R&D. Published February 3rd 2022. Updated December 10th 2025. Read April 30th 2026. Available [here](#).

24 Forskningsrådet. (2026). "Indikatorrapporten". Available [here](#).

25 OECD. (2025). "Gross domestic spending on R&D". Available [here](#).

The high levels of R&D investment across the Nordic countries are driven by both public and private actors, though the balance differs considerably across the region. Figure 3-2 shows public and business sector R&D expenditure for each country measured as a share of GDP, indexed to the EU average.

As the figure shows, Denmark, Finland and Sweden score better than the EU average in both public and business sector R&D spending. Denmark and Finland are driven primarily by strong public sector investment, with Denmark ranking first among all EU member states on this indicator. This is also seen for Norway, where public sector R&D spending is clearly higher than business sector spending, though at lower levels than Denmark's. Norway's lower scores on both indicators partly reflect that the indicator includes total GDP, including oil and gas revenue.²⁶ Norwegian GDP fluctuates significantly as it is heavily influenced by oil and gas prices, and the oil and gas sector has very low R&D intensity.^{27,28} In Sweden and Iceland business sector R&D clearly dominates, with Sweden ranking first in the EU at 160 percent of the EU average. Iceland is especially interesting with above-average business R&D despite below-average public investment. An explanation here can be the Icelandic R&D tax incentive scheme, which incentivises business sector R&D.

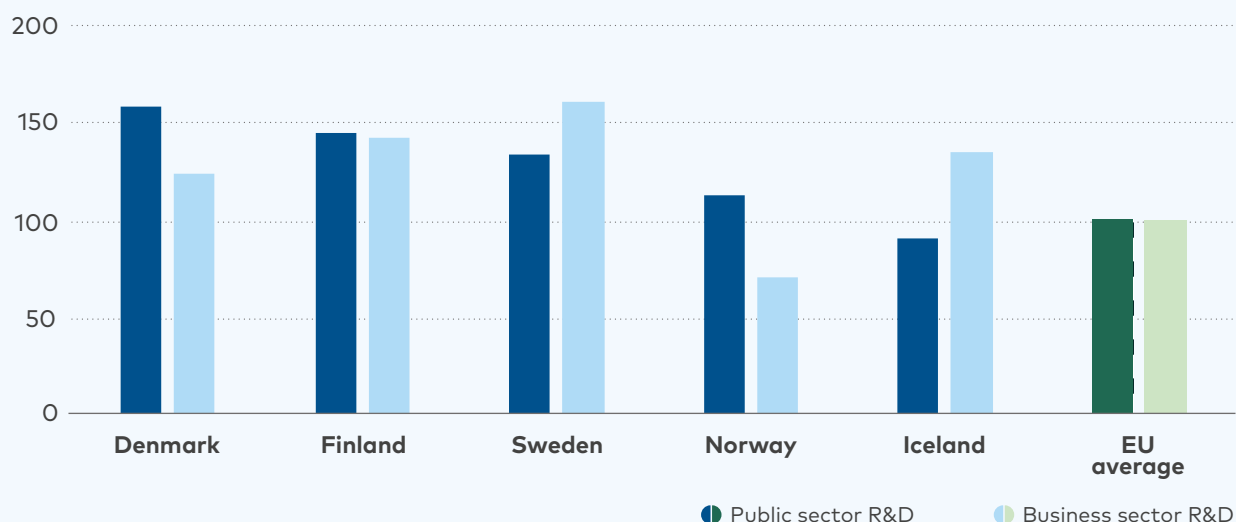


Figure 3-2: Public and business sector R&D spending²⁹, indexed to EU average = 100.³⁰

Source: EU Commission³¹

26 European Commission. (2025). "European Innovation Scoreboard 2025. Methodology report". Available [here](#).

27 Forskningsrådet. (2025). "Hvilke næringer driver næringlivets FoU-intensitet". Available [here](#).

28 Forskningsrådet. (2025). "Økonomiske trender". Available [here](#).

29 Indexed based on share of GDP in each country.

30 Scores are indexed to the EU average in 2025 (= 100). A score above 100 indicates performance above the EU average, while a score below 100 indicates performance below the EU average. For more details about the method, read the methodology report [here](#).

31 European Commission. (2026). "European Innovation scoreboard". Available [here](#).

While Figure 3-2 shows R&D expenditure as a share of GDP indexed to the EU average, this measure is sensitive to differences in GDP levels across countries. To address this, we in Figure 3-3 also show gross R&D expenditure per capita in euros for the Nordic countries and the EU average in 2024.

As Figure 3-3 shows, all the Nordic countries rank higher than the EU average when it comes to government R&D spending per capita. Iceland, Norway and Denmark are among the top five countries in the EU. Iceland operates one of the most generous R&D tax incentive schemes in the world, allowing up to 35 percent of R&D activities to be tax deductible, which drives substantial public support for research activity.³² In Norway, high public R&D spending is embedded in a broad institutional structure where research responsibilities are distributed across the entire government apparatus. All Norwegian ministries are responsible for financing research within their own areas, a model referred to as the sector principle, meaning that public research funding involves extensive coordination across government.³³ For Denmark, the high level of public spending reflects a long-standing political commitment. Various Danish governments have since 2010 maintained a public research budget of at least 1 percent of GDP, in line with the EU objective of total R&D spending reaching 3 percent of GDP.³⁴

In Sweden however, the business sector accounts for 74 percent of total R&D expenditure, a share comparable to that of the United States, Switzerland and the OECD as a whole, while the public sector's contribution is modest.^{35,36} See Figure 3-4 for total business enterprise R&D expenditure per capita in the Nordic countries.

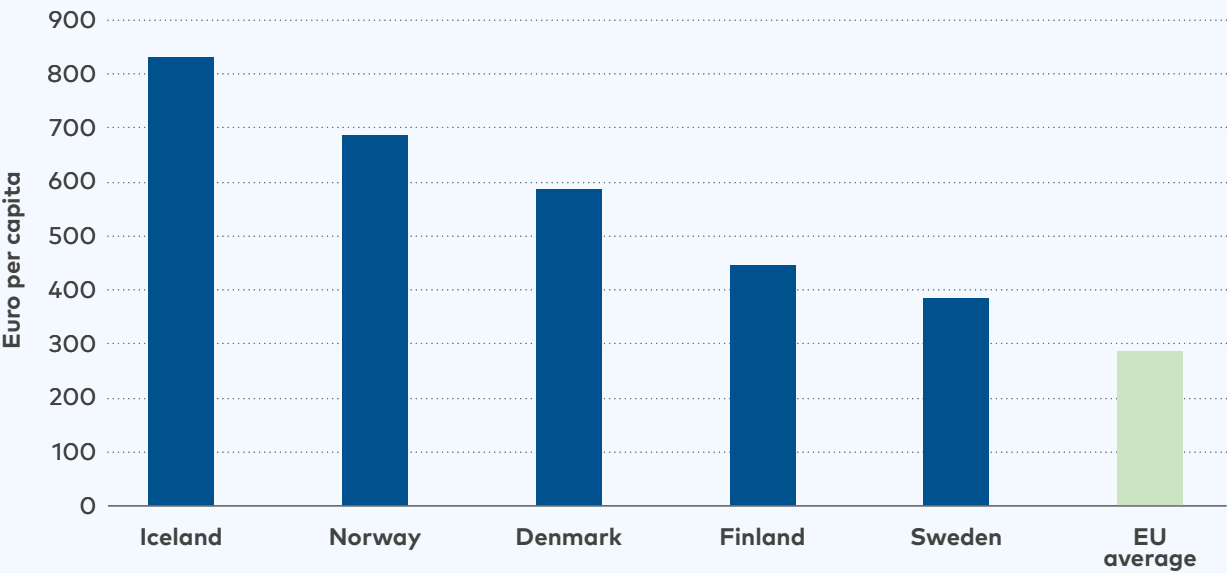


Figure 3-3: Total government budget allocations for R&D per capita. 2024. Source: Eurostat³⁷

32 Foreign Policy. (2025). "Iceland: Growth and economic transformation". Available [here](#).
33 Forskningsrådet. (2025). "Indikatorrapporten". Available [here](#).
34 Ministry of Higher Education and Science. (2026). "Research and innovation areas". Available [here](#).
35 Swedish Research Council. (2021). "The Swedish Research Barometer 2021". Available [here](#).
36 Statistics Sweden. (2024). "R&D activity in Sweden grows in 2023". Available [here](#).
37 Eurostat. (2026). "GBARD by socioeconomic objectives (NABS 2007)". Available [here](#).

Figure 3-4 shows a markedly different pattern from government spending. All the Nordic countries rank above the EU average. However, Sweden and Iceland rank as top two in the EU. Similar to Sweden, the business sector stands for around 75 percent of R&D expenditure in Iceland.³⁸ Sweden's high level of business enterprise R&D expenditure is driven by a concentration of globally competitive multinational companies such as Ericsson, Volvo and Spotify, whose substantial private R&D investments have made Sweden one of the most R&D-intensive business sectors in the world. This is further illustrated in Figure 3-5, which shows the number of Nordic companies represented among the world's most innovative companies.

Sweden has 26 companies in the top 2000, by far the most among the Nordic countries, reflecting the concentration of large, globally competitive firms in the Swedish economy. Denmark follows with 23 companies, driven by its life science sector and companies such as Novo Nordisk and Genmab. In Finland, Nokia is the most innovative company and invested more than 4 300 million euros in R&D in 2024, which is more than 10 times more than Wärtsilä, ranking at number two. Norway has only two companies in the top 2000, which is Visma and Equinor, while Iceland has only one company, Marel.³⁹

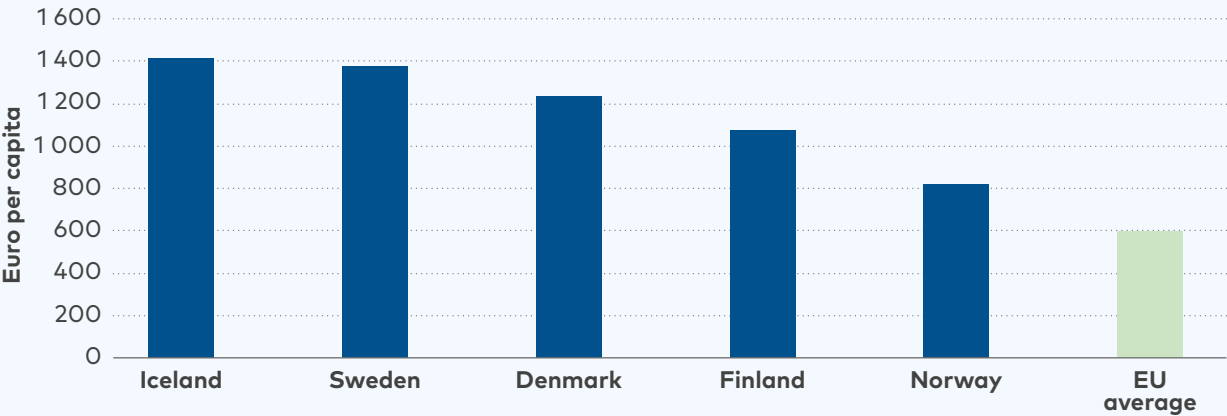


Figure 3-4: Total business enterprise R&D expenditure per capita. 2024. Source: Eurostat⁴⁰

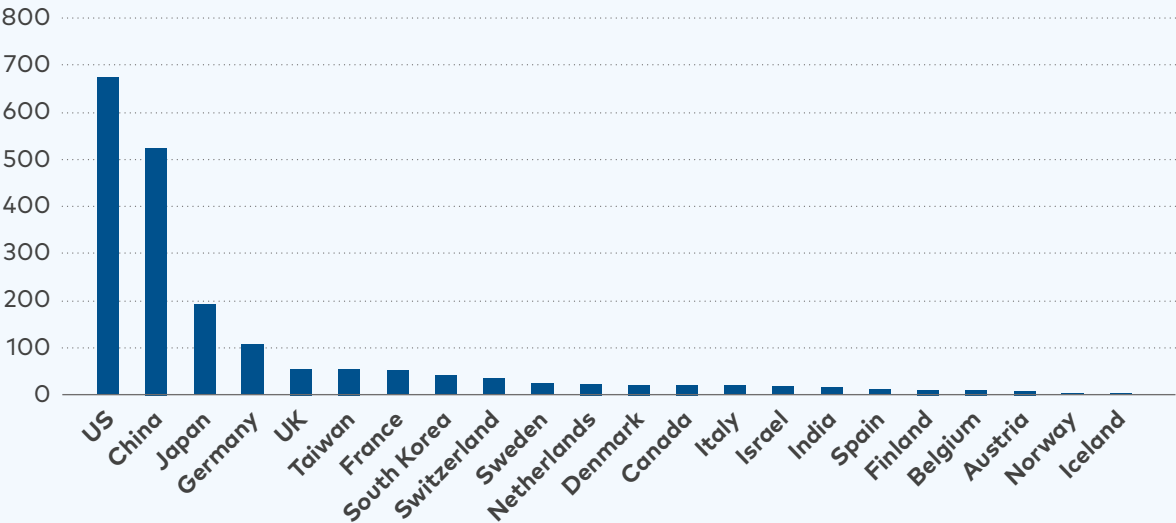


Figure 3-5: Number of companies in the EU Industrial R&D Investment Scoreboard top 2000, by the Nordic countries. 2024. Top 20 countries, plus Norway and Iceland. Source: EU⁴¹

38 Rannis. (2025). "Research and Development Expenditures in Iceland Continue to Increase". Available [here](#).

39 European Commission. (2025). "The 2025 EU Industrial R&D Investment Scoreboard". Available [here](#)

40 Eurostat. (2026). "BERD by NACE Rev. 2 activity". Available [here](#).

41 European Commission. (2025). "The 2025 EU Industrial R&D Investment Scoreboard". Available [here](#)

Beyond direct public expenditure on R&D, governments also support business innovation through different instruments, including grants, subsidies and R&D tax incentives. Figure 3-6 shows the level of the direct and indirect government support of business R&D for each Nordic country measured as a share of GDP, indexed to the EU average.

Iceland ranks first among all EU and neighbouring countries at 86 percent above the EU average, reflecting its generous R&D tax credit scheme, which the EIS 2025 identifies as among the most generous in Europe. Norway, Denmark and Sweden all fall below the EU average on this indicator, at 84 percent, 76 percent and 71 percent of the EU average respectively, despite their strong overall innovation performance. Finland ranks last among the Nordic countries, at only 32 percent of the EU average. Hence, except for Iceland, the Nordic countries are not especially generous when it comes to support of business R&D.

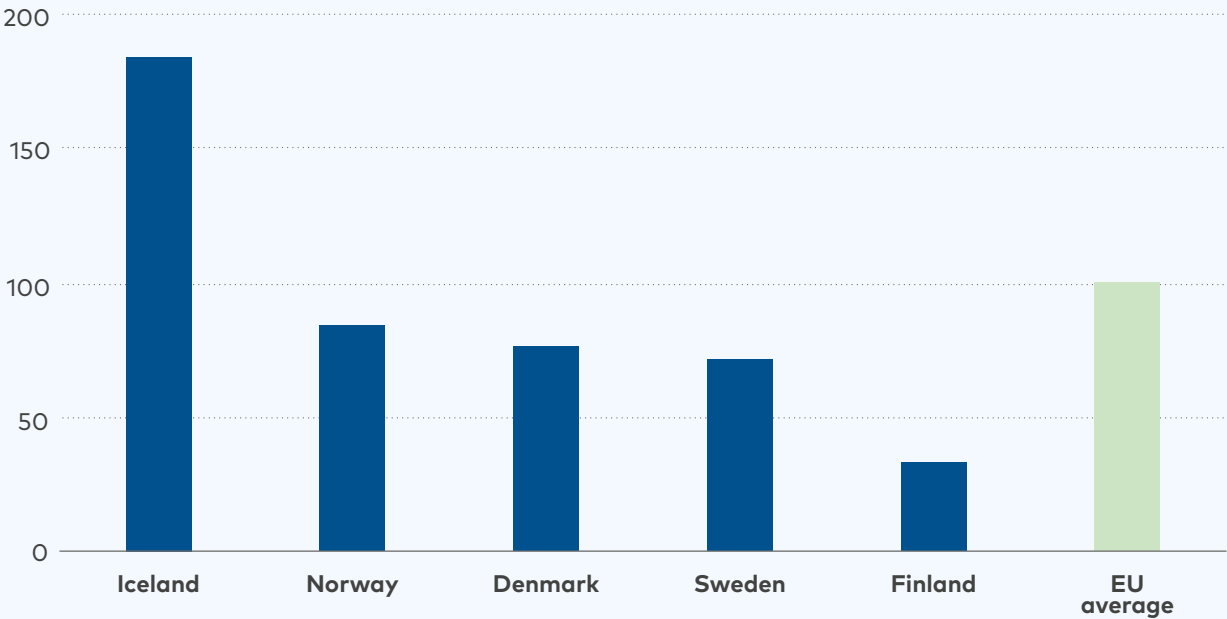


Figure 3-6: Direct and indirect government support of business R&D, indexed to EU average = 100.
Source: European Commission⁴²

42 European Commission. (2026). "European Innovation scoreboard". Available [here](#)

3.2 Variable commercialisation outcomes

The Nordic countries perform well on several innovation indicators relative to the EU average, as shown in the previous chapter. Yet strong inputs do not automatically translate into commercial results. The central question is whether research and knowledge generate economic value in the market, and here the picture is more mixed. The Draghi report identifies Europe's core challenge not as a lack of research capacity, but as a failure to translate innovation into commercialisation, noting that only about one third of patented inventions registered by European universities or research institutions are commercially exploited, and that innovative companies are hindered at every stage of the scaling process by a combination of regulatory, financial and market-related obstacles.⁴³

When we look more closely at the Nordic countries, we can see that the Nordic countries score relatively well on some commercialisation indicators compared to the EU average. In Figure 3-7, we show Patent Cooperation Treaty (PCT) patent applications per country.

As the figure shows, Sweden, Finland and Denmark score better than the EU average, and all three countries are in the top 10 countries globally in term of patent applications per USD 100 billion GDP.⁴⁴ Sweden's high patent score reflects the highest number of PCT applications per billion GDP among all EU member states, at 8.9 applications per billion GDP.⁴⁵ Norway and Iceland score below EU average. Norway's low rate can partially be explained by the large oil and gas industry, which drives high GDP and is less patent-intensive and characterised by incremental rather than breakthrough innovation.⁴⁶

Patent applications measure inventive activity, but not whether inventions reach the market. Taalbi (2025) analyses a database of 4 460 Swedish innovations and finds that a patent was filed for only 44 percent of them, and that patent data captures only 15 percent of the total information content about actual innovations. This means that patents and innovations are two partly overlapping but largely separate phenomena, where many innovations occur without patents and many patents never lead to commercial innovations. The implication is that patent statistics, while useful as one indicator of inventive activity, could overstate the degree to which research translates into market value.⁴⁷

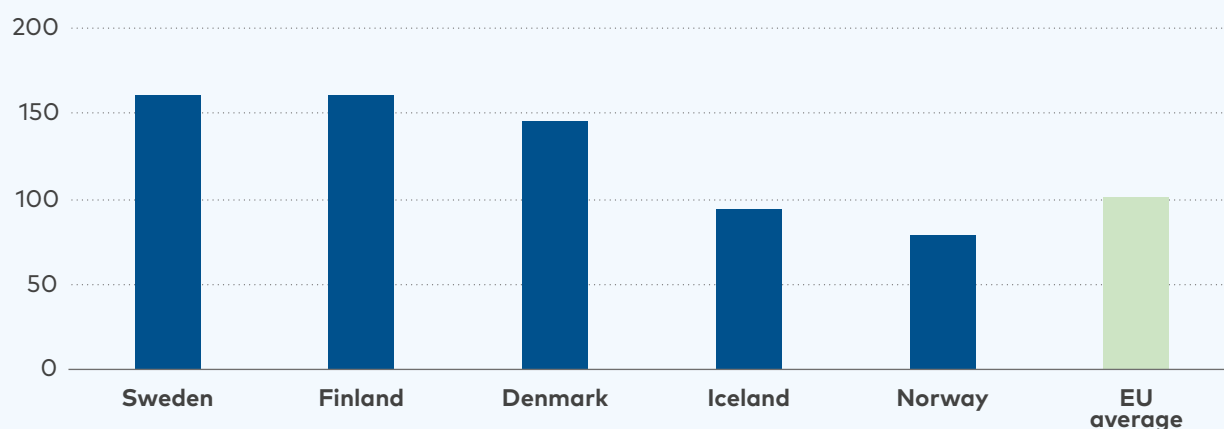


Figure 3-7: PCT patent applications per country⁴⁸, % of EU average in 2025.

Source: European Commission (2025). European Innovation Scoreboard 2025, Country Profiles

43 Draghi, M. (2024). "The Future of European Competitiveness: A Competitiveness Strategy for Europe". European Commission. Available [here](#).

44 WIPO. (2025). "Patents highlights". Available [here](#)

45 European Commission. (2025). "European Innovation Scoreboard 2025 – Country profile Sweden". Available [here](#)

46 European Commission. (2025). "European Innovation Scoreboard 2025 – Country profile Norway". Available [here](#)

47 Taalbi, J. (2025). "Innovation with and without patents – an information-theoretic approach". Available [here](#)

48 Number of patent applications filed under the PCT, at international phase, designating the European Patent Office (EPO). Patent counts are based on the priority date, the inventor's country of residence and fractional counts. To make it comparable across countries, it is measured in Gross Domestic Product in Purchasing Power Standard.

As patents do not measure where inventions reach the market, we in Figure 3-8 addresses this by plotting gross R&D expenditure against sales of new-to-market and new-to-firm innovations across European countries, where the Nordic countries are highlighted.

Overall, we observe a small positive correlation between R&D expenditure as a share of GDP and the sales of new-to-market and new-to-firm innovations index. Several countries with high R&D expenditure as a share of GDP nevertheless score only modestly on the sales of new-to-market and new-to-firm innovations index, and the Nordic countries are no exception. Among the Nordic countries, Finland and Sweden score above the EU average on commercialisation, while Denmark scores close to the EU average. Norway and Iceland score substantially below the EU average on commercialisation, despite investing at broadly similar levels in R&D as Denmark.

These commercialisation challenges are not unique to the Nordic countries but reflect a broader European pattern. The Draghi report identifies the innovation gap with the US and China as Europe's most pressing structural challenge, noting that EU companies invested EUR 270 billion less in research and innovation than their US counterparts in 2021. European venture capital markets remain significantly smaller than those of the US, and between 2008 and 2021, close to 30 percent of European unicorns relocated their headquarters abroad, the vast majority to the US. While the Nordic countries rank among Europe's strongest innovators and therefore perform well relative to the EU average, this benchmark obscures the extent to which they too lag behind global leaders. The core challenge for the Nordic countries is therefore not primarily to outperform European peers, but to close the wider gap to the US and China where much of the global competition for technology leadership is playing out.⁴⁹

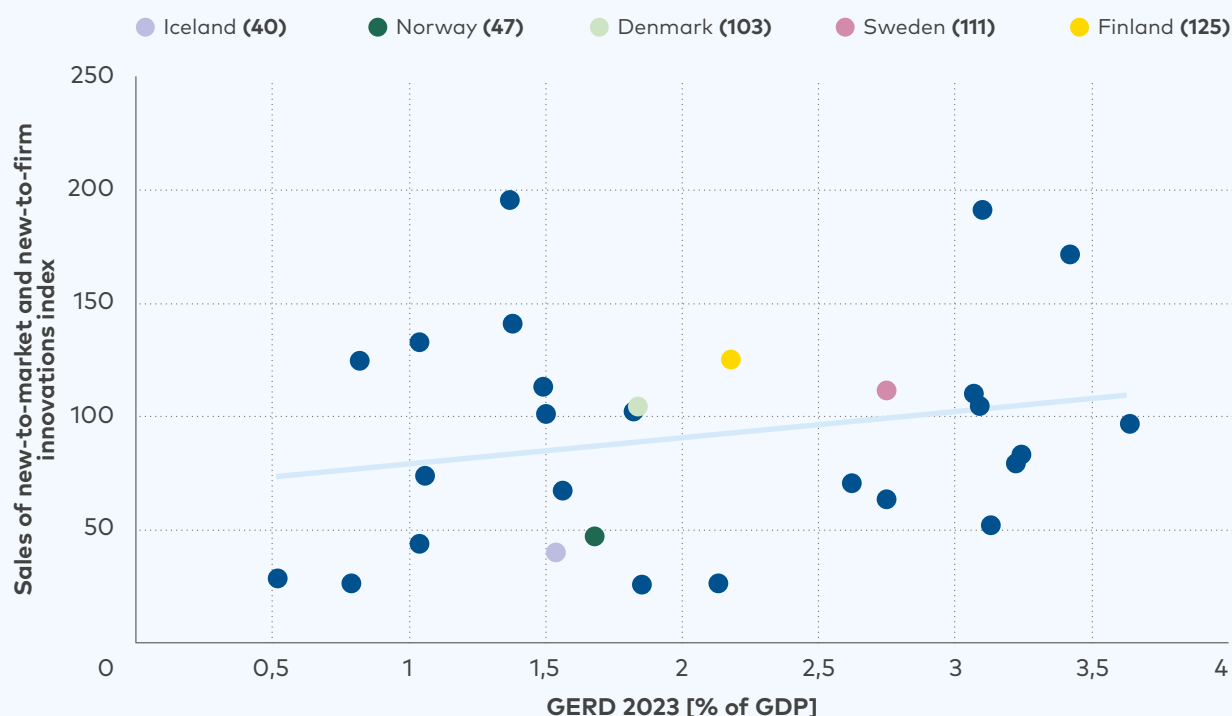


Figure 3-8: Gross R&D expenditure (GERD, percent of GDP) in 2023 and sales of new-to-market and new-to-firm innovations in 2024, indexed to EU average = 100. EU countries, Norway, Iceland, UK and Switzerland. Source: European Commission⁵⁰ and OECD⁵¹

49 Draghi, M. (2024). "The Future of European Competitiveness: A Competitiveness Strategy for Europe". European Commission Available [here](#).

50 European Commission. (2026). "European Innovation Scoreboard". Available [here](#).

51 OECD. (2025). "Main Science and Technology Indicators". Available [here](#)

3.3 Greenland, the Faroe Islands and Åland

Greenland, the Faroe Islands and Åland, while not included as separate analytical units in this report, face many of the same barriers as described in chapter 4, sometimes in an even more pronounced form. All three are closely integrated with Denmark, Norway and Finland, respectively, in terms of regulatory frameworks, labour markets and trade flows, yet characterised by very small domestic markets and economies concentrated in a few industries.

Greenland's economy is dominated by fisheries. Private sector diversification is limited, and while there are ambitions to develop alternative industries such as minerals, raw materials and tourism, progress has been slow. Mineral licences have e.g. so far been unable to attract financing.⁵² Labour shortages are also generally widespread across both the private and public sectors, with growing dependence on foreign labour.

In Åland, the largest businesses are ferry companies, banks and manufacturing industries such as high-tech plastics, carpentry, IT and fish processing.⁵³ Most businesses are small, and the service sector caters primarily to incoming visitors, while the agricultural sector consists of dispersed small farms. Student retention after graduation poses a challenge due to limited career opportunities on the island, a dynamic that constrains the knowledge base available to local firms. Åland is the Nordic region with the lowest share of SMEs introducing product innovations, with a normalised index value of 0.235 in 2023, compared to Oslo at the top with 1.0 and Stockholm at 0.948.⁵⁴

In the Faroe Islands, fisheries and related industries, are the largest components of the economy. The region has a relatively well-developed innovation system, but innovation activity is heavily concentrated with around 80 percent within fisheries, aquaculture and telecommunications.⁵⁵ National research programmes have although seen a recent 20 percent increase in applications, including a substantial share from researchers based outside of the Faroe Islands, and the Faroe Islands have stated an ambition to increase R&D intensity to 3 percent of GDP.⁵⁶

52 Bjerregaard, S. (2025). "Reforms can make Greenland's economy more self-sustaining". Danmarks Nationalbank, Analysis No. 11. Available [here](#).

53 Nordregio. (2025). Higher education beyond major urban areas in the Nordics: Challenges and opportunities (Section 3.2: Åland University of Applied Sciences, Finland). Available [here](#).

54 Nordregio (2024). "State of the Nordic Region 2024", ch. 8. Available [here](#).

55 EURAXESS (2024). "Country Profile: Faroe Islands". Available [here](#).

56 European Commission (2025). "3rd EU-Faroe Islands Joint Committee meeting under Horizon Europe". Available [here](#).

4 University and research system barriers

Across all five Nordic countries, academic career systems consistently reward scientific output, including publications, citations and research funding, while leaving commercialisation activities such as patents, spin-offs and industry collaboration largely unrewarded. This gap between what universities value and what the broader innovation system needs is reinforced by cultural norms that place entrepreneurship at the margins of academic life.

Such factors seem to create a structural brake in the translation of research into commercial activity, one that operates independently of the quality of the underlying research or the availability of capital. While these barriers are broadly shared across the region, their character vary. Sweden stands apart from the other Nordic countries in having retained the professor's privilege, giving individual researchers a stronger personal financial incentive to commercialise.

This chapter examines the following university and research system barriers to commercialisation in the Nordic countries: weak commercialisation incentives and weak entrepreneurial culture in academia. The first concerns the formal incentive structures embedded in academic career systems, where publication output, citation scores and research funding dominate the criteria for advancement while patents, spin-offs and industry collaboration carry little or no formal weight. The second concerns entrepreneurial culture in Nordic research environments, that is the extent to which researchers see commercial activity as a legitimate outcome of their work.

These barriers are most relevant in the earliest part of our analytical scope. At this stage, the transition from research to proof of concept and early commercial testing is shaped by academic incentive structures, the capacity of technology transfer offices (TTO) to identify and channel commercial opportunities, intellectual property (IP) governance, and whether the institutional culture supports rather than discourages entrepreneurial activity.

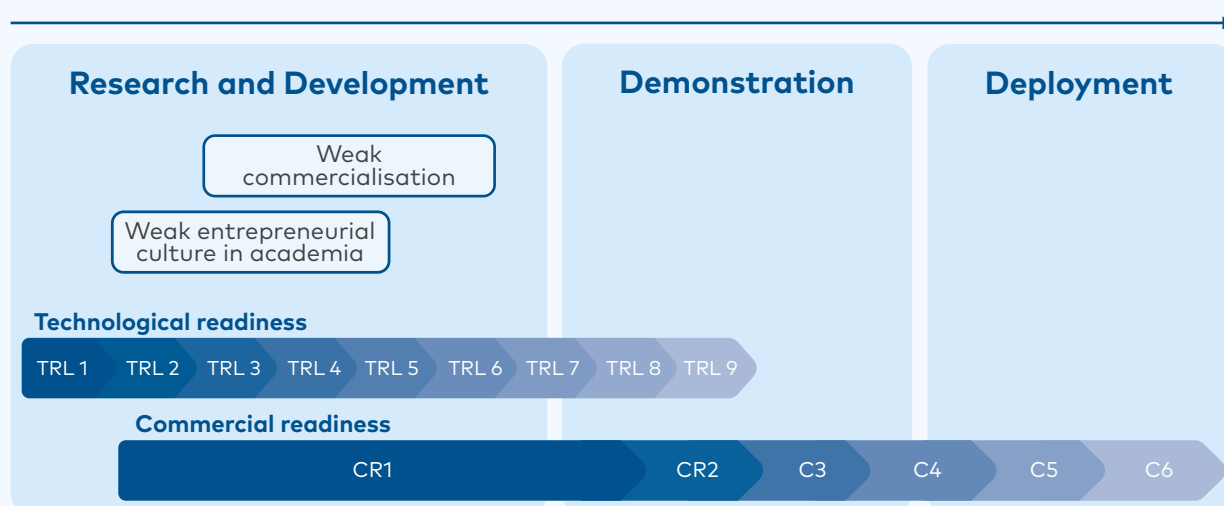


Figure 4-1: Where university and research system barriers fall in the TRL and CRI mapping

Across the Nordic region, the structural conditions for commercialisation are shaped as much by institutional incentives and cultural norms as by the availability of capital or the quality of research. An OECD review of commercialisation policies across member countries finds that less than half of faculty inventions with commercial potential are disclosed, in part because researchers do not recognise the commercial potential of their own work.⁵⁷ The report identifies a range of factors shaping researchers' willingness to engage in commercialisation, including institutional culture, whether university management actively supports commercialisation, and the disclosure behaviours of peers and department chairs. Interviews conducted across all five Nordic countries for this study pointed in the same direction: stakeholders consistently identify weak formal incentives and limited awareness of commercial pathways as central barriers.

This matters to the extent that there exists research with genuine commercial potential that goes unpursued, not because it lacks value, but because researchers are unaware of it, or because the incentives they face do not make it worth their while.

4.1 Weak commercialisation incentives

Based on our study, weak commercialisation incentives in university and research systems represent a shared barrier across all five Nordic countries. Academic career progression is primarily determined by publication output, citation scores and success in attracting research funding, while commercialisation activities such as patents, licences and spin-offs carry little formal weight.

The OECD review of Norwegian innovation policy outlines that commercialisation indicators are not included in the performance-based funding system for universities.⁵⁸ None of the five largest Norwegian universities have formal policies recognising commercialisation as a merit-based factor in career advancement, and publication requirements remain highly dominant.⁵⁹ Only one in five applicants to TTOs come from a researcher or a student while four out of five come from the industry.⁶⁰ Reformed recruitment and promotion mechanisms are called for to incentivise skills beyond research and teaching.⁶¹ Studies from Finland find that personal incentives for commercialisation remain weak despite growing institutional awareness of commercialisation of research.^{62,63} The same pattern is documented in Sweden and Denmark: commercialisation carries little formal weight in academic career advancement at Swedish universities, where such activity is not consistently recognised alongside traditional outputs publications and PhD supervision,⁶⁴ and weak university incentive structures are similarly identified as one of the central barriers to research commercialisation of social sciences, humanities and arts (SSHA) at Danish universities.⁶⁵

57 OECD (2013). "Commercialising Public Research: New Trends and Strategies". Available [here](#).

58 OECD (2017). "OECD Reviews of Innovation Policy: Norway". Available [here](#).

59 Menon Economics (2018). "Incentives for Research Commercialisation". Available [here](#).

60 Bohmann, E., Langa, D., Nast, C., Nechaev, I. & Tian, Y. (2022). "Norwegian Commercialization of Academic Research: A Policy Brief". Available [here](#).

61 Research Council of Norway International Advisory Board (2022). "Research, innovation and education: Ensuring better integration". Available [here](#).

62 European Commission. (2025). "Support to Finland on improving R&D collaboration between research organisations and the private sector." Horizon Europe Policy Support Facility. European Commission Directorate-General for Research and Innovation. Available [here](#).

63 Business Finland (2025). "Research to Business Programme Evaluation". Available [here](#).

64 Borlaug, S.B. & Jacob, M. (2013). "Who commercialises research at Swedish universities and why?". Available [here](#).

65 Bloch, C.W. (2024). "Commercialization of research from the social sciences, humanities and arts (SSHA) at universities: A scoping study". Available [here](#).

The interviews conducted as a part of this study confirm that these findings are broadly generalisable across all five Nordic countries. What is measured in academia in all Nordic countries is primarily publications, citation scores, and success in attracting external research funding. Performance indicators for commercialisation are largely absent from institutional performance frameworks, making time spent on commercialisation activity an opportunity cost to publication-based career advancement. Any motivation to commercialise must come from within the individual researcher rather than from institutional frameworks.

As shown in Figure 4-2, the Nordic countries score very high compared to the EU average on international scientific co-publications measured per capita, reflecting strong collaboration and high research quality. This suggests that the volume and quality of research output is itself unlikely to be a primary barrier to commercialisation in the region.

A lack of awareness of commercialisation possibilities is itself a barrier closely linked to the absence of formal incentives. As researchers have little reason to seek out information about commercial pathways, and because universities have limited motivation to ensure that such information reaches them, researchers may be unaware that their work has commercial potential or that practical pathways exist to pursue it without compromising their research output. One informant noted that that awareness-raising campaigns have a positive effect on commercialisation behaviour. An example is so-called "masterclasses" and direct outreach to students and PhD candidates, which reportedly have made researchers more aware of the possibilities for commercialisation, including the practical point that patenting does not need to preclude publication.

An important question in the governance of research commercialisation concerns who owns the intellectual property arising from publicly funded research, the university or the individual researcher. Where researchers retain ownership of their inventions, this is commonly referred to as the teacher's exception or professor's privilege. Except for Sweden, which has retained the teacher's exception, all Nordic countries have adopted institutional ownership models in which intellectual property rights arising from university research are vested in the institution rather than the individual researcher. This means the university owns all intellectual property arising from research.

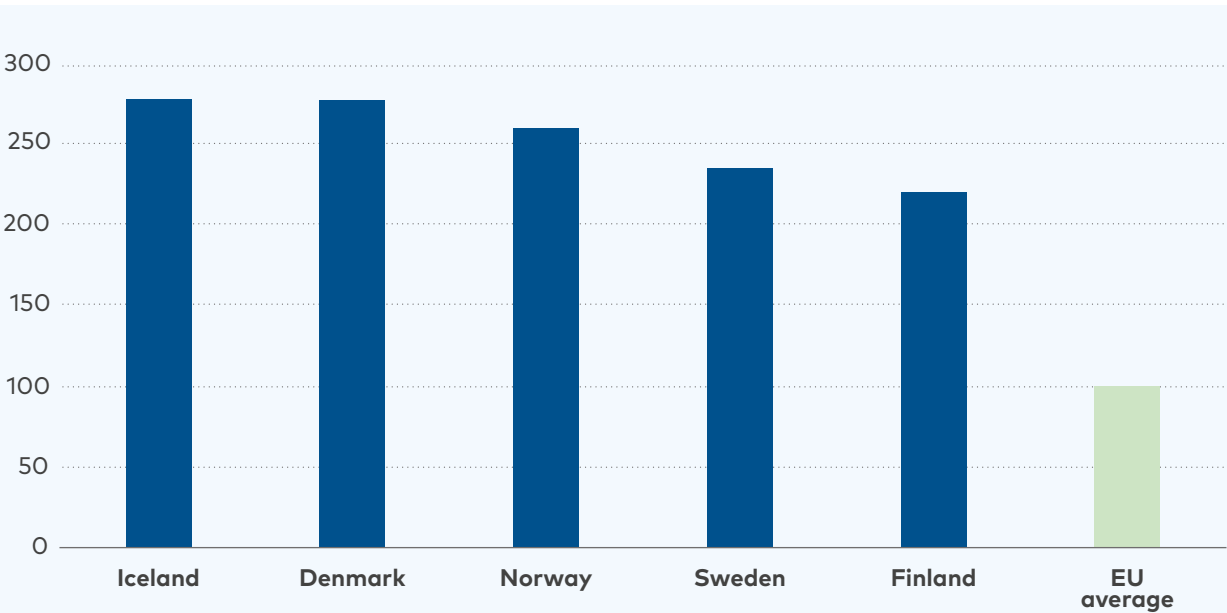


Figure 4-2: International scientific co-publications per capita, Nordic countries, indexed to EU average = 100. Source: European Commission⁶⁶

66 European Commission. (2026). "European Innovation Scoreboard". Available [here](#).

Removing professor's privilege is a relatively recent development in the Nordic countries. In Denmark, Finland and Norway, reforms introduced in the early 2000s changed the intellectual property structure at universities by granting universities ownership of inventions and new ventures arising from academic research. These reforms were partly inspired by the United States, where the 1980 Bayh–Dole Act transferred intellectual property rights from the federal government to universities, with the researcher typically retaining around one-third of the income.⁶⁷ European policymakers sought to replicate this institutional arrangement because US universities were seen as more successful at commercialisation than European universities. The abolishment of the professor's privilege was done to strengthen university incentives and capacity to support commercialisation activity. Policymakers believed that universities would be more willing to invest in patenting, licensing, and spinout creation if they held ownership rights to inventions generated by their researchers, and the reforms were accompanied by the establishment and expansion of technology transfer offices (TTOs). The underlying rationale was that commercialisation depends not only on the researcher's effort, but also on institutional investments by universities. Although the abolishment transferred ownership of inventions to universities, all countries introduced revenue-sharing arrangements to maintain some incentives for individual researchers, often around one-third to the researcher and two-thirds to the university.

In Norway, where the reform took effect in 2003 and transferred two-thirds of income rights to universities, data show a decline in both patenting and entrepreneurship rates among university researchers, and negative effects on their willingness to commercialise.^{68,69} Similar findings emerge from Finland, where the abolition of the professor's privilege in 2007 led to a decline in university researcher patenting of between 29 and 46 percent, depending on whether the announcement period is included in the analysis.⁷⁰ The University of Helsinki has recently (in 2025) introduced new commercialisation principles, including increasing researchers' share of net income from licensed intellectual property from around one third to 50 percent to incentivise innovation for researchers.⁷¹ As the change is recent, it is too soon to say anything on how this has affected commercialisation at the university.

Sweden stands out for having preserved its equivalent of the teacher's exception. Swedish researchers retain ownership of their inventions, giving them a stronger personal financial incentive to commercialise. Researchers across disciplines in Sweden cite the professor's privilege as the most important incentive for engaging in commercialisation, though it is not uncontested. A study from 2013 of academic faculty views on knowledge transfer and commercialisation at five public universities in Sweden finds that researchers across disciplines cite the professor's privilege as the most important incentive for engaging in commercialisation. Technology transfer personnel on the other hand tend to hold the opposing view, arguing that firm formation would increase if universities rather than individual faculty owned the intellectual property accruing from research.⁷² However, in the study, multiple faculty personnel argue that academics should not have rights that other public employees do not have, and that allowing individual researchers to profit personally from publicly funded research is difficult to justify. Also among researchers there is ambivalence towards commercialisation, particularly when it comes to firm formation, which the study identifies as an important perceived challenge to academic careers.

67 Hvide, H. K. & Jones, B. F. (2018). "University innovation and the professor's privilege". Available [here](#).

68 Menon Economics (2018). "Incentives for Research Commercialisation". Available [here](#).

69 Hvide, H. K. & Jones, B. F. (2018). "University innovation and the professor's privilege". Available [here](#).

70 Ejermo, O. & Toivanen, H. (2018). "University invention and the abolishment of the professor's privilege in Finland". Available [here](#).

71 University of Helsinki (2025). "A boost for Finland from research commercialisation – The government should definitely allocate RDI funding to this". Available [here](#).

72 Borlaug, S. B. & Jacob, M. (2013). "Who commercialises research at Swedish universities and why?". Available [here](#).

Figure 4-3 shows the total number of academic patents per capita for the Nordic countries in the period 2000–2020, compared to 35 European Patent Organization (EPO) member states. The patents include universities associated with at least one patent application filed by the EPO during this period, either as the applicant directly or because one of the listed inventors was affiliated with the university.

Norway lies around the average for all EPO member states, while Iceland only had two patent active universities that filed 8 patents in this period. Denmark and Finland, both of which abolished professor's privilege, perform well above the average, and Denmark performs over Sweden which has maintained the professor's privilege. This suggests that the intellectual property rights regime of a country, and specifically whether or not a country has the professor's privilege, is not itself a determining factor for academic patenting intensity, and that other elements also play a role in shaping patenting activity.

While the abolishment of the professor's privilege was accompanied by the establishment of TTOs, the evidence suggests that TTOs have not fully compensated for the loss of individual commercialisation incentives. In Norway, TTOs are often caught between two roles, partly functioning as commercial market actors and partly as extensions of the university, creating ambiguity that limits their effectiveness.⁷³ Further, in Finland, the Business Finland Technology Transfer Initiative found that only three of thirteen universities have dedicated Technology Transfer funds, and that the TT ecosystem is fragmented particularly at early stages.⁷⁴ A related challenge is the limited human resources dedicated to commercialisation at many universities. In Finland, for instance, the TTO function is in practice handled by just one or a few individuals at most universities. Based on the interviews, Aalto University, the University of Helsinki, and Tampere University are notable exceptions that proactively invest substantial personnel resources in this area.

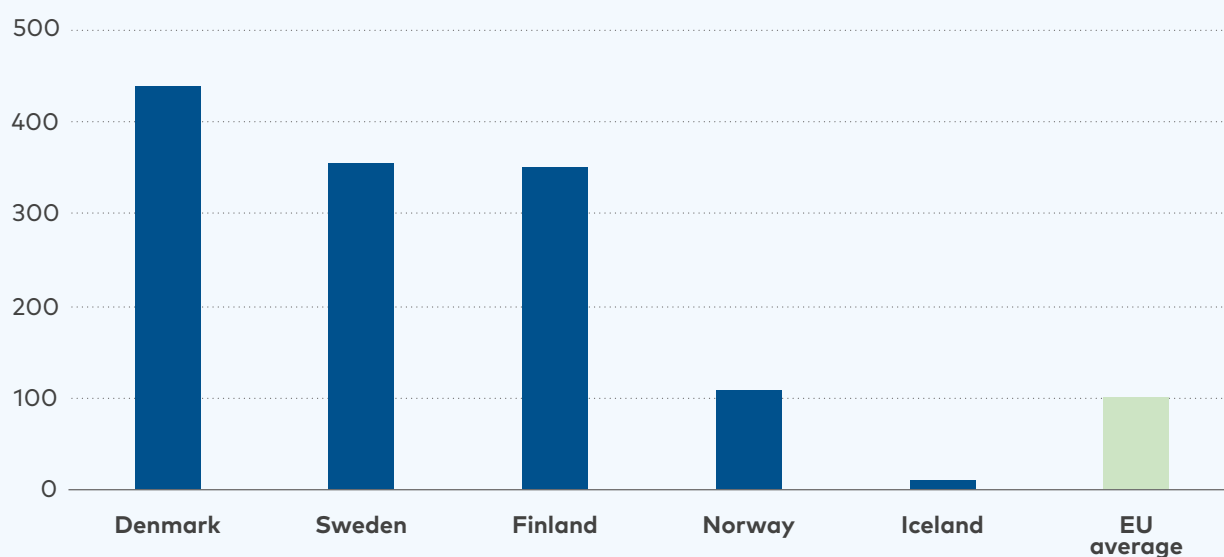


Figure 4-3: Total number of patents from patent-active university between 2000–2020. Per capita. EPO average = 100. Source: EPO (2024)⁷⁵

73 Menon Economics (2018). "Incentives for Research Commercialisation". Available [here](#).

74 Business Finland (2023). "Technology Transfer Initiative: Final Report". Available [here](#).

75 EPO (2024). "The Role of European Universities in Patenting and Innovation". Available [here](#).

A further challenge concerns the fragmentation of TTO operations across universities. In Finland, universities tend to operate separately, with TTOs functioning in isolation from one another, limiting the synergies that a more coordinated approach could yield. Commercialisation models and processes are also unevenly developed, where some universities have built strong capabilities, while others lag considerably behind. A European Commission review of Finland's research and innovation system echoes this concern, finding that best practices are not systematically shared across the country's 14 universities, and that legal frameworks are interpreted differently by individual institutions. This makes it difficult for companies to engage with the university sector in a predictable and coherent way, increasing the risk of missed collaborations with leading researchers.⁷⁶

Some of the informants interviewed as a part of this study also point to TTO structures as a potential bottleneck in the commercialisation process. A particular challenge is the limited capacity to handle the diversity of innovations that come through them, including identifying the most appropriate commercialisation pathway for each case. Where TTOs lack sufficient resources or specialised expertise, this process can be slow, and the solutions offered may not be well suited to the specific innovation at hand. Interviews across stakeholders suggest that TTO capacity varies across universities and countries, with some functioning well while others remain under-resourced.

4.2 Weak entrepreneurial culture in academia

Even where formal incentive structures are adjusted, cultural norms, attitudes and preferences can remain a constraint, making the entrepreneurial culture in academia weak. In some academic environments, engagement with industry or the pursuit of commercial value can represent a distraction from, or even a compromise of, scientific integrity. From our interviews it seems to be a widespread perception among researchers that commercialisation conflicts with research excellence, which can be a barrier because cultural norms shape individual decision-making unrelated to formal policies and incentive structures. Researchers who have not been exposed to commercialisation thinking during their training and who face social and financial incentives pointing towards academic activity rather than venture creation, are unlikely to pursue commercialisation pathways even when formal barriers are reduced.

The Draghi report argues that Europe lacks the connection between academia and industry that characterises the most innovative regions in the world. European researchers are poorly integrated into the kind of innovation clusters combining universities, start-ups, large companies and venture capitalists that have driven successful commercialisation in high-tech sectors elsewhere. The report points out that Europe has no innovation clusters ranked among the top ten globally, while the US has four and China has three. This matters because such clusters have been critical to the more dynamic industrial structure seen in the US.⁷⁷ In Finland, the European Commission's review of R&D collaboration in Finland identifies weaknesses in science-business collaboration and commercialisation incentives. The report highlights weak mutual understanding and insufficient communication between academia and industry.⁷⁸ An interview study of researchers at five Swedish universities further finds that, in addition to lack of formal incentives, researchers describe a persistent identity conflict between the role of public servant and entrepreneurial academic.⁷⁹ This leads to both underreporting or avoidance of commercial activity.

76 European Commission. (2025). "Support to Finland on improving R&D collaboration between research organisations and the private sector." Horizon Europe Policy Support Facility. European Commission Directorate-General for Research and Innovation. Available [here](#).

77 Draghi, M. (2024). "The Future of European Competitiveness: A Competitiveness Strategy for Europe". European Commission.

78 European Commission. (2025). "Support to Finland on improving R&D collaboration between research organisations and the private sector." Horizon Europe Policy Support Facility. European Commission Directorate-General for Research and Innovation. Available [here](#).

79 Borlaug, S. B. & Jacob, M. (2013). "Who commercialises research at Swedish universities and why?". Available [here](#).

Our interviews with stakeholders in Sweden also highlight weak entrepreneurial culture as a structural barrier to commercialisation in the Nordic region. The same is identified in the Norwegian interviews, where stakeholders describe a system in which substantial public investment in basic research is not matched by equally strong institutional or cultural support for commercialising the results. For comparison, it is explained that the boundary between academia and industry is considerably less permeable in the European context than in the United States, where commercial activity is more broadly accepted as complementary to a research career rather than in tension with it. Our interviews with Danish and Finnish stakeholders also indicate that this is a challenge in all the other Nordic countries.

A review of the literature on academic engagement from 2011 to 2019 show that studies from European contexts tend to focus on the barriers and costs associated with commercial activity, including identity tensions, reputational risks and career concerns, while studies from the United States more commonly document the positive effects of industry collaboration on academics' funding, productivity and broader engagement.⁸⁰ The studies are not systematic cross-national comparisons, making it difficult to draw firm conclusions, but the pattern in the literature is consistent with the broader argument that commercial activity is more broadly accepted as complementary to an academic career in the United States than in Europe.

The strong academic focus in the education and research system is central to understanding why the cultural barrier is so persistent. In the Nordic countries, it has been the norm to complete a full research degree without engaging with entrepreneurship, business development, or commercial thinking in any substantive way. When researchers who have been trained in this way subsequently pursue academic careers, they carry a professional identity and a set of values that may make commercialisation feel foreign. In Finland, an interviewee suggests that this pattern is gradually shifting at some leading universities but based on the literature review and the interviews we have conducted the mindset remains common across the broader system in the Nordics.

80 Perkmann, M., Salandra, R., Tartari, V., McKelvey, M., & Hughes, A. (2021). Academic engagement: A review of the literature 2011–2019. *Research Policy*, 50(1), 104114. Available [here](#).



When discussing incentives and culture, several interviewees pointed to factors that extend beyond the academic context itself, noting that the barriers researchers face is not only shaped by university structures and norms, but also by the broader society in which they operate. In all five Nordic countries, generous social security systems and high wage levels in established industries reduce the relative attractiveness of entrepreneurial risk-taking. A salaried research or industry position offers security, social status, and competitive compensation that early-stage ventures typically cannot match. This may raise the personal cost of the entrepreneurial choice in ways that are specific to the Nordic context, compared to for example the United States.

The research on the relationship between generous social security systems and innovation activity is not conclusive. A study of 31 developed countries, drawing on panel data from 2004–2011, finds that higher social spending is negatively associated with entrepreneurial activity and business ownership, arguing that generous welfare systems raise the opportunity cost of venture creation relative to stable salaried employment.⁸¹ European Innovation Scoreboard data from 2019–2020 shows that the most comprehensive welfare states consistently rank as innovation leaders on measures of R&D intensity, knowledge-intensive employment, and high-technology exports, with the Nordic countries at the top.

Eastern European countries, by contrast, have the lowest levels of social protection expenditure, but the highest rates of new enterprise formation per inhabitant.⁸² Research findings on this question hence depend on what aspects of the relationship between the welfare state and commercialisation are measured. Whether innovation performance is defined as systemic research capacity, human capital formation, and knowledge-intensive production, or as new venture creation and individual entrepreneurial activity, will shape the conclusions. Which of these outcomes is more valuable is also ultimately a normative question.

Finland stands out in the Nordic comparison as the country where entrepreneurial culture in academic environments is most developed, though significant variation exists within the system. Interviews suggests for example that the legacy of Nokia may have contributed to a broader acceptance of commercial activity as a legitimate and valued outcome of research. There seem to be a general perception among Nordic stakeholders that Finnish researchers and institutions tend to bring commercially experienced people into the development process earlier than their counterparts in other Nordic countries. Yet also in Finland, the educational foundation for this culture remains uneven. At big universities there is historically no requirement to engage with entrepreneurship during studies, and it remains possible today to complete a research degree without any exposure to commercial thinking. The evaluation of Research to Business scheme in Finland also finds that there is a need for more systematic monitoring of data on the progress of innovations across different universities.⁸³ At the national level, and from the perspective of investors and funders, it would be important to be able to communicate and demonstrate what is being developed within university innovation activities and how innovations are progressing.

81 Solomon, S., Bendickson, J. S., Liguori, E. W. & Marvel, M. R. (2021). "The effects of social spending on entrepreneurship in developed nations". Available [here](#).

82 Hajighasemi, A., Oghazi, P., Aliyari, S. & Pashkevich, N. (2022). "The impact of welfare state systems on innovation performance and competitiveness: European country clusters". Available [here](#).

83 Business Finland (2025). "Research to Business Programme Evaluation". Available [here](#).

5 Financial and capital barriers

Access to capital is an important condition for commercialisation and financial barriers are consistently highlighted as important barriers faced by Nordic innovators. All five Nordic countries have public funding systems that support basic research and early project development, but the transition from publicly funded research to privately financed commercial activity remains a persistent challenge across the region. This chapter examines three interconnected dimensions of the capital challenge: the scarcity of early-stage risk capital, fragmented financing systems and the absence of specialised investors with the sector knowledge. Though the Nordic countries all face these challenges, important cross-country differences exist in the severity, structure, and institutional context of each barrier.

This chapter examines the following financial and capital barriers to commercialisation in the Nordic countries: lack of early-stage risk capital, fragmented financing systems and lack of specialised capital and investors. The first concerns the availability of capital at early stages of commercialisation, where the availability of both public and private funding can vary across stages and gaps can emerge. The second concerns the structure and coordination of financing systems across the Nordics, where fragmented and misaligned funding instruments fail to provide ventures through the commercialisation process. The third concerns the quality and fit of available capital, where deep tech and research-based ventures often require investors with sector-specific knowledge.

The interdependence between the three is also important: insufficient early-stage capital limits the pipeline available to specialised investors at later stages. These barriers arise in the transition from proof of concept to early commercial activity, where financing typically involves a mix of private and public capital, and gaps can emerge where neither is sufficient to carry a venture forward.

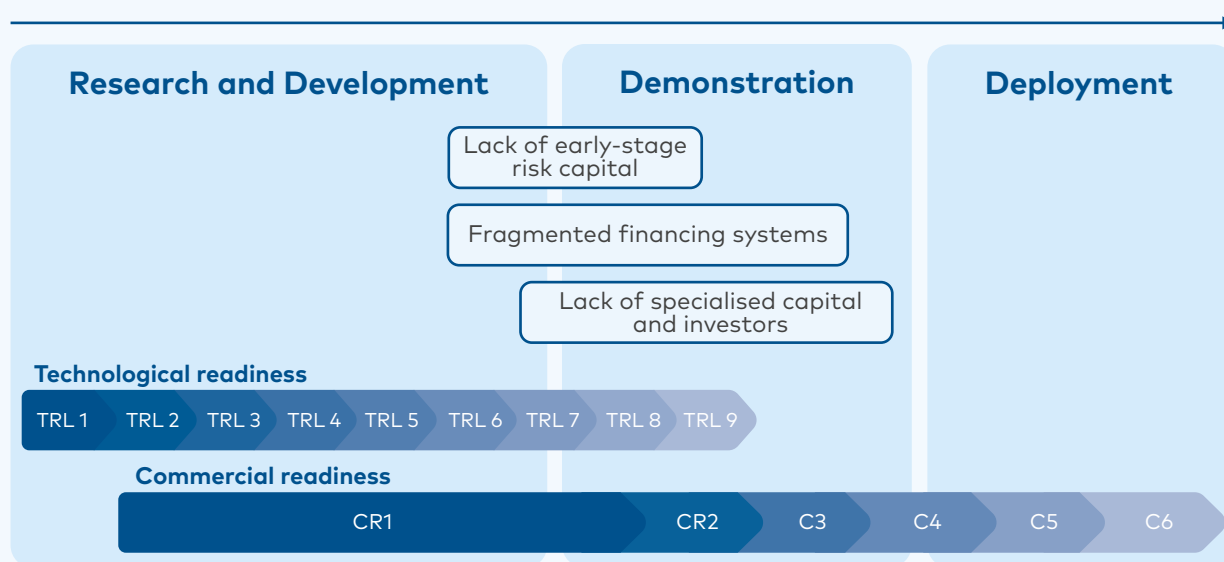


Figure 5-1: Illustration of financial and capital barriers on the TRL and CRI scales

5.1 Lack of early-stage risk capital

Across all five Nordic countries, access to early-stage risk capital is identified as a critical barrier. Without such capital, innovations that have moved beyond basic research but have not yet demonstrated sufficient commercial viability to attract private investors are left without the resources needed to develop further. Public funding schemes cover basic research but typically withdraw before a venture reaches the stage where private investors are willing to engage, leaving a gap between pre-seed and seed funding, long before commercial revenue is within reach, which leaves many promising innovations without the resources needed to develop further. This timing mismatch means many start-up companies stall before reaching commercial viability.

This structural gap is commonly referred to as the *valley of death*. This term describes the difficulty in getting enough funding from getting the first findings from research that have commercial potential and to having a commercially sustainable product. When research is based in the universities, this gap typically arises between the end of public and the start of private funding in the Nordic countries. The EIB Report 2024/2025⁸⁴ places the European valley of death in a global context: EU scale-ups raise only 50 per cent of the capital that Silicon Valley peers raise by year ten, and European venture capital investment is approximately six times smaller than in the United States.

The capital gap matters more today than it did a decade ago. The technologies at the centre of the green and digital transition (battery production, hydrogen, carbon capture, fusion, AI infrastructure and quantum hardware) are substantially more capital-intensive than the software and consumer technologies that dominated the previous venture cycle. Bringing a first-of-a-kind industrial plant or a deep tech hardware platform to market typically requires hundreds of millions of euros before first revenue, well beyond the scale of a normal seed or Series A round. There are reasons to think the valley of death is both wider and deeper for key emerging technologies that the Nordic countries are betting on for future competitiveness and emissions reductions.

Figure 5-2 shows data cumulative early-stage funding by Nordic fund managers in Norway, Finland, Denmark and Sweden in the period 2014–2024. Sweden stands out with funds raising close to 5 billion EUR over the period, nearly twice as much as Finland, which comes in second at approximately 2.6 billion EUR. Both Denmark and Norway score lower, with funds raising 1.2–1.3 billion EUR each in the period.

It should be noted that Figure 5-2 shows capital raised by fund managers located in the Nordic countries, not investments made in Nordic ventures, as Nordic funds also invest outside their home markets.

Based on data from the European Innovation Scoreboard, we can see that many of the Nordic countries actually rank relatively high in a European context when it comes to venture capital expenditure. Figure 5-3 show the difference in venture capital expenditure as a percentage of GDP in the Nordic countries in 2025, indexed to the EU average.

84 European Investment Bank (2025). Investment Report 2024/2025. Available [here](#).

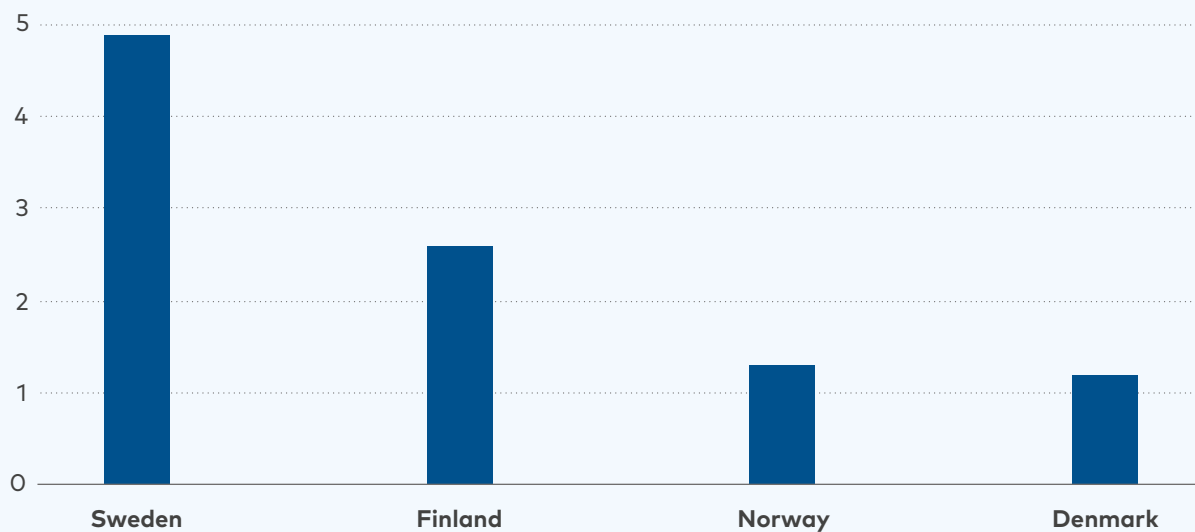


Figure 5-2: Amount of early-stage fundraising by Nordic fund managers cumulative from 2014–2024, billion EUR. Source: NVCA, PEREP and Menon Economics

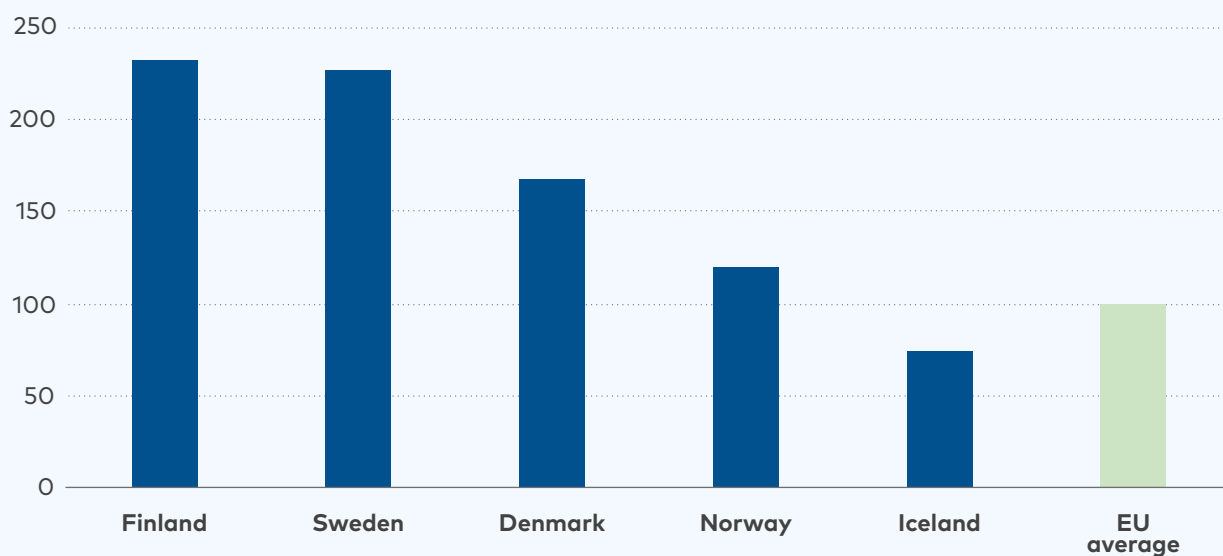


Figure 5-3: Venture capital expenditure as a percentage of GDP⁸⁵, Nordic countries, 2025, indexed to EU average = 100. Source: European Commission⁸⁶

⁸⁵ The Eurostat data used in the European Innovation Scoreboards includes total GDP, which includes oil and gas revenue in Norway

⁸⁶ European Commission. (2026). "European Innovation Scoreboard". Available [here](#).

For venture capital expenditure, Finland ranked highest among the Nordic countries, slightly ahead of Sweden. Both countries recorded venture capital expenditure more than twice the EU average. Denmark and Norway also performed above the EU average, though more modestly, while Iceland ranked below the EU average. Notably, these figures exclude government-backed investment schemes.

Several Norwegian stakeholders that we have interviewed as a part of this study claim that access to early-stage risk capital is the single biggest barrier for commercialisation in Norway. Informants describe a trend where investors are increasingly looking to invest in more mature products and technologies, where less risk is involved, meaning that capital is arriving at a later stage than previously. One informant from Norway specifically points to the concentration of Norwegian investment capital in established industries such as offshore technology, which limits the availability of risk capital for new technology ventures in other industries. This is consistent with recent quantitative evidence. A 2026 analysis by Copenhagen Economics finds that VC investments in Norway have averaged around EUR 200 million per year over the past three years, placing Norway 2 basis points below the EU average and well behind all Nordic peers across all investment stages. Public capital directed towards early-stage companies is also significantly lower than in comparable Nordic countries, estimated at up to four times less than in Denmark and Finland relative to GDP.⁸⁷ NHO similarly documents that the number of companies receiving venture capital in Norway has amounted to around 60 percent of the Nordic average since 2016, and that venture capital as a share of GDP remains particularly low at the late stage, where the gap to the other Nordic countries has widened over time.⁸⁸

Furthermore, the informants also point out that attracting the wrong investors at an early stage can be costly. If such investors lead to capital dilution too early, they can potentially make the company unattractive for other investors, which again hurts the prospect for successful commercialisation. Even in Sweden, which leads the Nordic region in early-stage fundraising, informants describe how SMEs often stall at the earliest stages of development, before a concept has been tested or validated, because they lack the resources to reach market readiness. However, informants note that access to early-stage capital is still relatively good in Sweden. This is consistent with a recent analysis of Swedish cleantech venture capital, which finds that risk capital typically enters relatively late in the company lifecycle, with many firms between four and nine years old at the time of their first investment, suggesting that the earliest phase of development is largely borne by founders or public sources.⁸⁹

An evaluation of Business Finland's Research to Business (R2B) programme identifies "lack of follow-up funding" as the most frequently cited barrier, referenced by 36 per cent of projects supported by the programme,⁹⁰ and Business Finland's Technology Transfer Initiative separately identifies insufficient financing at early stages as one of six systemic technology transfer gaps in the Finnish system.⁹¹ In the interviews with Finnish informants, the structural challenge at the early stage is linked to the absence of large family-owned companies willing to take substantial risk.

87 Copenhagen Economics. (2026). "Developing a thriving innovation and venture capital ecosystem in Oslo". Available [here](#)

88 NHO. (2025). "Veien til vekst". Available [here](#)

89 Tillväxtanalys. (2026). "Riskkapital för clean tech". Available [here](#)

90 Business Finland (2025). "Research to Business Programme Evaluation". Available [here](#).

91 Business Finland (2023). "Technology Transfer Initiative: Final Report". Available [here](#).

The picture in Iceland is similar as in the other Nordic countries. In a survey of Icelandic innovators from 2025, nearly half of the respondents view Iceland as attractive for start-ups, but fewer than one in three see it as suitable for companies in rapid growth phases, a difference that can be driven by a funding gap between early-stage grants and the series A stage (first significant round of venture capital), where private investors are willing to engage at scale.⁹² Yet, the Icelandic informants we have interviewed do not identify access to early-stage funding as a major barrier, noting that the public funding system through Rannís covers basic research and early project development. The informants rather highlight that significant gaps emerge at the scale-up stage where dedicated funders remain scarce.

In the interviews, the market for Danish venture capital is also described as well-functioning by Danish informants. Informants note that there is sufficient financial capital in certain sectors, and that public instruments, such as Innovation Fund Denmark's schemes, play an important complementary role to private capital. At the scale-up stage, gaps become more apparent. Denmark has by far the fewest active domestic venture capital funds among the Nordic countries, with a particularly strong concentration in seed and early-stage investments, making Danish startups more reliant on international investors as they progress into later funding stages. Compared to 2023, growth-stage investment volumes fell by 25 percent and the number of growth-stage deals dropped from 16 to 10 in 2024.⁹³

A market lens complicates the story. Capital is mobile and investors actively search for returns, so in a reasonably functioning market one would expect good ideas to attract financing, including across borders. Information asymmetries and high screening costs in deep tech do create real frictions, particularly for first-of-a-kind hardware and long-horizon technologies where uncertainty is hard to price. But the persistent gap between Nordic ventures and capital may not only reflect a shortfall in the supply of finance. It may also reflect the supply of investable ideas, meaning research-based ventures that are sufficiently de-risked, well-managed and structured in ways that match what professional investors can underwrite. The data showing Finland and Sweden with venture capital expenditure more than twice the EU average, alongside informant accounts of capital arriving late and concentrating in mature opportunities, is consistent with both readings: too little risk-tolerant capital at the earliest stages, and too few ventures reaching the threshold where that capital can be deployed at acceptable risk.

Across the Nordic region, the picture that emerges is one of significant variation in both the volume and structure of early-stage capital, but with a shared underlying pattern: access to capital is lacking either in all stages of scale-up funding or in certain ones. In addition, it often arrives too late to support research-based ventures through the earliest and most uncertain phases of commercialisation. Interviewees also point to the importance of enabling early-stage innovations to be tested at a bigger scale through large companies and public sector actors, noting that sandboxes and procurement mechanisms remain underutilised across the Nordic region. Nevertheless, as we see from the data, there is still a substantial private venture capital available especially in Finland and Sweden.

92 Northstack (2025). "Nýsköpunarlandið Iceland – Second Edition". Available [here](#).

93 EIFO. (2025). "Danish Venture Capital Market Analysis 2024". Available [here](#)

5.2 Fragmented financing systems

Even where capital is available in the aggregate, lack of coordination and fragmentation in the financing landscape can itself become a barrier. Across the Nordic countries, the financing landscape for commercialisation activities is characterised not only by gaps in volume, but by fragmentation: funding instruments are dispersed across multiple private and public stakeholders and stages. The Draghi report highlights that financing instruments in the EU are fragmented across national and EU levels, which hampers scale and prevents the creation of large capital pools for high-risk innovation, while also increasing complexity for private actors⁹⁴. It further notes that fragmented financing reduces the effectiveness of public support for innovation.

The fragmentation and complexity of public funding is also highlighted in national reports, e.g. in the 2025 Horizon Europe report analysing the barriers hindering public-private collaboration within Finland's research and innovation (R&I) ecosystem.⁹⁵ In this report, complexity of the funding instruments and a fragmented system is brought up as a barrier, alongside insufficient public support as Finland invests less in R&D support than the EU average (see also chapter 3). Further, the report outlines that there is low awareness of funding opportunities especially among SMEs due to the complexity of the system. In Sweden, a government commission tasked with coordinating public support for startups and scaleups found that innovative SMEs face a fragmented support system with a large number of undercapitalised players providing short-term and sometimes overlapping support, noting explicitly that the lack of coordinated collaboration between national support players creates barriers for companies seeking to co-finance from multiple sources.⁹⁶

Swedish interviewees also point to an overreliance on public funding and insufficient private sector engagement as a structural barrier in the Swedish commercialisation system. The problem is described not as one of absolute scarcity, but of alignment and fragmentation:⁹⁷ what is needed is not simply more capital, but capital that is better aligned with the needs in the market and better coordination of financing supply. Interviewees from Denmark describe a similar problem, where small and dispersed funding allocations fail to give ventures sufficient momentum. Soft and spread-out funding is identified as inadequate, at stages where early investor involvement is described as essential. In Denmark, the challenge is described not as a funding gap as such, but as a timing mismatch: the question is how far public funding goes, and at what point private investors feel comfortable taking over. The underlying issue is whether innovations can be sufficiently de-risked to attract private capital before public support runs out.

94 Draghi, M. (2024). "The Future of European Competitiveness: A Competitiveness Strategy for Europe". European Commission. Available [here](#).

95 European Commission (2025). Support to Finland on improving R&D collaboration between research organisations and the private sector. Final report. Available [here](#).

96 Bergdahl, A., Falk, E., & Närfelt, K.-H. (2025). "Uppdrag att samordna och effektivisera det offentliga stödet till startups och scaleups: Delrapportering av regeringsuppdraget KN2024/01060". Vinnova – Sveriges innovationsmyndighet. Available [here](#).

97 The landscape is extremely fragmented, making it difficult for SMEs, entrepreneurs and researchers to understand how things fit together and where to go for what.

5.3 Lack of specialised capital and investors

Where capital is available, it is not always in the hands of the right people. The scarcity of specialised investors is related to, but distinct from, the early-stage capital shortage described above. It concerns not only the volume of capital available but its quality, alignment, and expertise. The overreliance on generic public funding schemes as a substitute for specialised private capital is a cross-Nordic pattern and seems at least to be prominent in the tech sector. In this context, public funding schemes do not fully compensate for the absence of specialised private capital, particularly in technology-intensive sectors.

Deep tech and research-based ventures are example of sectors that often require investors with sector knowledge and long-term horizons. Such investors are, based on the interviews we have conducted, relatively scarce across the Nordics. This challenge is partly structural: in small economies, the overall investor base is more limited, which in turn reduces the availability of specialised capital. This is particularly pronounced in countries with more concentrated industrial structures, where investor competence and networks tend to be aligned with a narrower set of sectors. As a result, ventures operating outside these established domains may struggle to access relevant expertise and risk capital

In the interviews, we have been presented with several examples of the scarcity of specialised investors. In Norway, the absence of tech investors with the patience and sector knowledge to support research-based commercialisation is identified as a specific gap by informants. Particularly, for ventures involving deep technology, having the right type of investor with a long-time horizon is described as a precondition for commercial success, and there is a recognised need for specialist funds that collaborate directly with universities and researchers. Also, in Sweden, informants identify the lack of specialised investors with sector knowledge specifically in deep tech as a barrier to commercialisation. In interviews from Finland, the absence of health sector investors is specifically identified as a constraint, while the evaluation of Business Finland's Research to Business (R2B) programme identify that approximately one third of R2B applications come from health and life sciences.⁹⁸ In a small economy such as Iceland, the overall investor base is limited, making it difficult to sustain specialised investors across a wide range of sectors. The absence of venture capital oriented towards the defence sector is an example identified by informants as a specific gap in Iceland.

Interviewees also point to cross-border Nordic cooperation as a potential lever for addressing the scarcity of specialised investors, noting that investors with sector expertise in one country could broaden their view to ventures across the Nordic region.

98 Business Finland (2025). "Research to Business Programme Evaluation". Available [here](#).

6 Market size and human capital barriers

Across the Nordic countries, the demand side presents a persistent structural challenge to commercialisation. Small domestic markets limit the pool of potential customers needed to scale new solutions, while the scarcity of commercialisation competence and the concentration of expertise in dominant industries can constrain the growth of new and innovative companies. Together, these market and demand conditions shape the capacity to commercialise, in ways that are largely independent of research quality or the availability of capital.

This chapter examines three interconnected barriers shared across all five Nordic countries. The first concerns the issues coming from operating in small domestic markets, which either result in insufficient demand, or force companies to internationalise before they are fully ready. The second concerns the shortage of commercial skills and scaling experience, a gap that is itself partly a consequence of operating in markets where few companies have previously made the journey to international scale. The third concerns the concentration of technical and commercial talent in dominant industries such as oil and gas in Norway, life sciences in Denmark and historically ICT in Finland. This limits the pool available to new ventures and constrains the broader diversification of innovation ecosystems.

These barriers arise in the transition from early commercial testing to commercial scale-up. At this stage, innovations have moved beyond proof of concept and require access to real customers, commercial partnerships and scaling capacity. Unlike financial barriers, which can in principle be addressed through improved capital instruments, market size and human capital barriers reflect structural features of Nordic economies that are more difficult to address through targeted policy intervention alone.

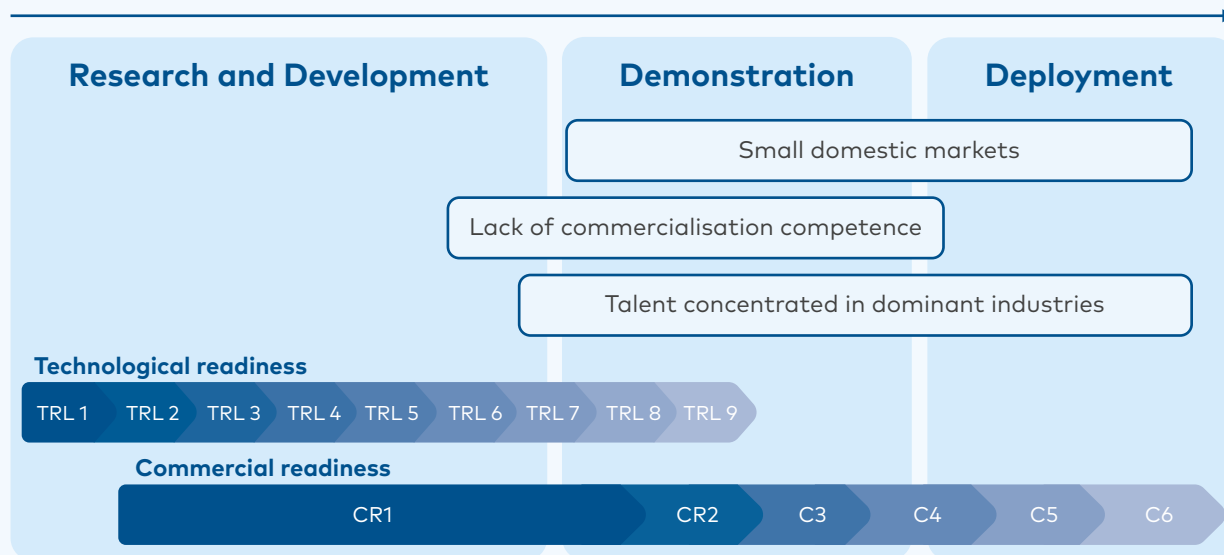


Figure 6-1: Illustration of market size and human capital barriers on the TRL and CRI scales

6.1 Small domestic markets

Small domestic markets are among the most consistently identified structural constraints on commercialisation across the Nordic region in the evidence base for this study. With populations ranging from approximately 370,000 in Iceland to just over ten million in Sweden, Nordic start-up companies face demand constraints that their counterparts in larger economies do not. As illustrated in Figure 6-2, the combined GDP of all the Nordic countries is smaller than Germany's and France's alone, and a fraction of the United States'.

An OECD study of the five Nordic countries finds that between 6 and 20 percent of scale-ups became foreign owned over 2014–2020, well above the rate for comparable non-scaling firms. In most cases the acquisition took place during the high-growth phase itself rather than before or after, suggesting that the need for international capital and scaling up are closely intertwined.⁹⁹

With a small domestic market, companies must often internationalise early in order to find sufficient demand for their products. This requires costs and therefore might come at a stage when they often lack the capital, commercial networks and organisational capacity to do so effectively.

It is worth noting that exposure to international markets at an early stage can generate important positive effects. The need to compete beyond a small domestic market forces firms to adopt scalable business models, professionalise commercial functions, and prioritise productivity-enhancing investments earlier in their lifecycle than firms operating in larger home markets. In this sense, early internationalisation can act as a disciplining mechanism, accelerating learning, innovation and the efficient allocation of resources.¹⁰⁰ Interviews from Norway also emphasises the importance of the need to have an international scaling mindset among domestic companies, including through programmes that expose Norwegian firms to global innovation environments. However, these potential productivity gains are unevenly realised and typically contingent on firms having sufficient access to capital, capabilities and networks. Without these, the pressures associated with small domestic markets are more likely to constrain growth than to enhance it.

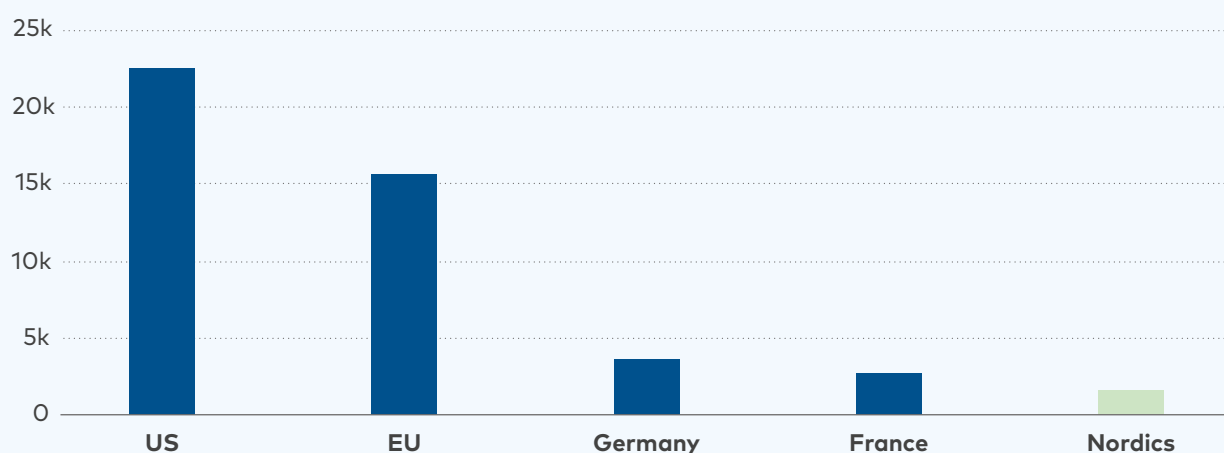


Figure 6-2: Nordic GDP compared to selected economies. Billion 2015-USD. Source: World Bank (2026)¹⁰¹

⁹⁹ OECD (2023). "Grow and Go? Retaining Scale-ups in the Nordic Countries". *OECD Regional Development Papers*, No. 51. Available [here](#).

¹⁰⁰ Shuijing Jie, Rainer Harms, Aard J. Groen & Paul Jones (2021): Capabilities and Performance of Early Internationalizing Firms: A Systematic Literature Review, *Journal of Small Business Management*. Available [here](#).

¹⁰¹ World Bank (2026). *GDP (current LCU)* [Data set]. World Development Indicators. Available [here](#).

The need for early international sales raises capital requirements, demands commercial competence, and requires access to international networks. Evaluation of the Business Finland Research to Business program identifies internationalisation as a persistent challenge for Finnish research-based ventures, noting that customer validation and business modelling, including for international markets, remain among the most challenging aspects of the commercialisation process.¹⁰² This is underpinned by a Finnish informant, which mention that small domestic markets gives limited testing opportunities for commercial growth.

Iceland has the smallest domestic market. With a population of approximately 370,000, the domestic market is too small to provide commercial validation for most technology products. A 2025 survey of Icelandic innovators found that fewer than one in three respondents viewed Iceland as a good place for companies in rapid growth phases, with the small domestic market cited as the leading challenge.¹⁰³ Icelandic interviewees confirm that Icelandic tech companies typically treat the domestic market as a stepping stone rather than a primary target, and that scale-up is the most difficult phase of the commercialisation journey, partly because the country lacks the networks and knowledge spillovers needed to support rapid growth. Iceland's innovation policy explicitly recognises that access to international markets must be broadened to enable more diverse innovation activities, implying that the domestic market alone is insufficient to support the full range of entrepreneurial and innovative endeavours.¹⁰⁴

6.2 Lack of commercialisation competence

Small domestic markets not only constrain the commercial opportunities available to innovative ventures but also shape the talent available to pursue them. The pool of serial entrepreneurs with commercialisation and scaling experience is limited, and across all five countries, early-stage ventures lack experienced CEOs, sales competence and venture-building experience. Early-stage ventures, particularly those emerging from research environments, frequently lack experienced leaders who have previously built companies, as well as competence in sales, market development and investor relations. This reflects that building and scaling a company requires a different set of skills than developing a technology or conducting research. In many cases, strong technical or academic teams lack experience with customer engagement, business development and capital raising. This makes it more difficult to establish viable business models, attract investment and navigate early market entry, increasing the risk that promising ideas are not successfully commercialised.

Business Finland identifies lack of access to experienced commercial expertise in research environments as one of the six systemic gaps in the Finnish technology transfer system.¹⁰⁵ The Business Finland Research to Business program (R2B) evaluation confirms that customer validation and business modelling remain among the most challenging aspects of the commercialisation process for Finnish academic teams, and identifies a specific gap, the experience gap, relating to the difficulty of recruiting experienced commercial team members into early-stage ventures funded through the R2B programme. Social science and humanities research environments have lower awareness of R2B and lower participation rates, suggesting that the competence gap is particularly pronounced outside the natural sciences and engineering.¹⁰⁶ A further challenge is that innovation projects are not always sufficiently mature at the point when commercialisation begins. Early-stage innovations are pushed too quickly into R2B funding, resulting in large, long projects that are not yet appropriate for their level of development. Commercialization expertise is needed from the very early stages of the innovation process to ensure sufficient maturity.

102 Business Finland (2025). "Evaluation of Research to Business". Available [here](#).

103 Northstack (2025). "Nýsköpunarlandið Iceland – Second Edition". Available [here](#).

104 OECD (2021). "Fostering innovation in Iceland for the digital era". Available [here](#).

105 Business Finland (2023). "Technology Transfer Initiative: Final Report". Available [here](#).

106 Business Finland (2025). "Research to Business Programme Evaluation". Available [here](#).

Our interviews with Norwegian informants also describe the shortage of commercially experienced founders as a primary barrier at the firm level. The pool of Norwegian entrepreneurs who have previously scaled companies (particularly internationally) is described as small, meaning that even companies that succeed in commercialising frequently struggle to become high-growth and internationally competitive. In Denmark, on the other hand, the concern centres more on scale-up competence than early-stage commercial skills. A solution can be to recruit commercially experienced founders from other Nordic countries and internationally. Informants from Iceland also suggest that attracting foreign talent and building international partnerships can serve as mechanisms for compensating for these domestic constraints. Cross-border mobility of commercial expertise may itself therefore be part of the solution to the small-market talent challenge.

Overall, the limited pool of commercial and scaling expertise reflects the structural constraints of small domestic markets, where fewer firms reach the stage at which such experience is built and reused. This creates a self-reinforcing dynamic, where the lack of experienced founders and investors constrains the ability of new ventures to scale, and in turn limits the development of future talent.

6.3 Talent concentrated in dominant industries

In several Nordic countries, key commercial and technical talent is absorbed by a small number of dominant industries. This limits the pool of talent available to new ventures and early-stage companies, making talent difficult to access. At the same time, these industries offer a large number of high-paying jobs for engineers and other highly skilled professionals, increasing competition for talent and making early-stage ventures less attractive employers. In addition, parts of the educational system are closely aligned with the needs of established industries, reinforcing the supply of skills towards these sectors. Together, this reduces both the availability of talent for new ventures and the incentives to develop and commercialise new ideas, particularly in emerging sectors.

Norway presents the clearest case of talent concentration driven by a single dominant sector. The oil and gas industry has shaped the supply and career expectations of technically trained talent in ways that create structural disadvantages for the startup ecosystem. Efforts to diversify the Norwegian economy have made some progress, but the energy sector remains a strong pull factor for technically and commercially skilled people. Informants from Norway note that there are significantly fewer technology professionals with international experience compared with comparable countries, partly because of this dynamic, making recruitment into early-stage ventures such as deep tech companies particularly difficult. In Denmark, the life sciences cluster plays a similar role, drawing in talent from across the economy. The wind energy sector is also mentioned in the interviews as a major attractor of technical and commercial talent. Further, a Swedish informant highlights innovation clustering in established industries as one of the structural barriers to commercialisation in new industries, with innovation activity clustered in a small number of large firms or universities, limiting spillovers to new ventures.¹⁰⁷

107 It is important to note that, even if they do risk complicating the commercialisation process, having a large share of employment in certain industries itself is not a problem. These sectors are all highly productive and thus provide substantial economic benefits.

Table 6-1 shows the three industries with the highest employment specialisation for each Nordic country, as measured by the Balassa Index with the EU as reference. A value above 1 indicates a higher employment share than the EU average. Norway and Iceland stand out with particularly high scores in mining and quarrying (which includes oil and gas) and fishing and aquaculture and air transport.

Finland experienced a severe version of this risk with the decline of Nokia, which had concentrated a large proportion of Finnish ICT talent and commercial expertise. However, the legacy of Nokia is also described as a contributing factor in the subsequent growth of the Finnish startup community, as the release of experienced talent into the broader ecosystem created new venture activity. A study of the Finnish innovation ecosystem shows that firms hiring former Nokia employees experienced significant positive effects on both employment and value added, using the closure of Nokia's mobile device division in 2014 as a quasi-natural experiment to causally identify the broader ecosystem benefits of releasing experienced talent from a superstar tech firm.¹⁰⁸ A similar dynamic, where early commercial successes generate a self-reinforcing cycle of talent, capital and entrepreneurial ambition, is described in interviews as an explanatory factor behind Sweden's stronger startup culture. As one Norwegian informant notes, Swedish success stories have led individuals who built wealth through early ventures to reinvest in new startups, gradually building up a pool of experienced founders, investors and high-competence talent that is less developed in for example Norway, where investment tends to cluster around established sectors rather than new technology-driven ventures.

Table 6-1: Top five industries by employment specialisation for each Nordic country in 2023, measured by the Balassa Index with the EU as reference

Source: Eurostat [nama_10_a64_e] (2026)^{109,110}, Menon Economics

Country	Industry	Index score
Denmark	Water transport	5.4
	Pharmaceutical products and pharmaceutical preparations	3.5
	Publishing activities	2.1
Finland	Forestry and logging	3.6
	Water transport	2.6
	Manufacture of paper and paper products	2.4
Sweden	Forestry and logging	5.0
	Publishing activities	2.2
	Manufacture of paper and paper products	1.8
Iceland ^P	Fishing and aquaculture	24.4
	Air transport	16.2
	Travel agency, tour operator, etc.	7.1
Norway	Mining and quarrying ¹¹¹	11.1
	Fishing and aquaculture	10.3
	Water transport	5.3

108 Ali-Yrkkö, J., Cherif, R., Hasanov, F., Kuosmanen, N., & Pajarinen, M. (2021). Knowledge Spillovers From Superstar Tech-Firms: The Case of Nokia. IMF Working Paper WP/21/258. Available [here](#).

109 Eurostat (2026). *Employment by detailed industry (NACE Rev.2) – national accounts [nama_10_a64_e]* [Data set Eurostat Data Browser. Available [here](#).

110 In addition, to these sectors, important sectors such as wind production in Denmark, metal and chemical production in Norway, and machine and automotive production in Sweden, employ a significant share of the national talent.

^P Provisional data.

111 Industries are defined at NACE Rev. 2 level 2, except Mining and quarrying, which is aggregated at level 1 and includes the oil and gas sector for Norway.

Another relevant aspect in the discussion about talent access in the Nordic countries is the overall supply of STEM-qualified labour, which shapes the longer-term capacity for innovation and commercialisation across the economy. STEM skills (Science, Technology, Engineering, and Mathematics) play a key role in innovation and commercialisation. The European Commission's STEM Education Strategic Plan identifies shortages of STEM professionals as a constraint on innovation and growth, particularly in sectors such as clean technology, digital technologies and advanced manufacturing.¹¹² Figure 6-3 shows the percentage of students aged 20–29 in STEM-education in 2023¹¹³. The supply of STEM graduates varies considerably across the Nordic countries. Sweden has the highest share of students enrolled in STEM education among the Nordic countries at 21.7 per cent, followed by Finland (20.9 per cent) and Denmark (19.3 per cent), both close to the EU average of 20.5 per cent. Norway (16.6 per cent) and Iceland (12.9 per cent) fall below the EU average, with Iceland having the lowest share among the Nordic countries.

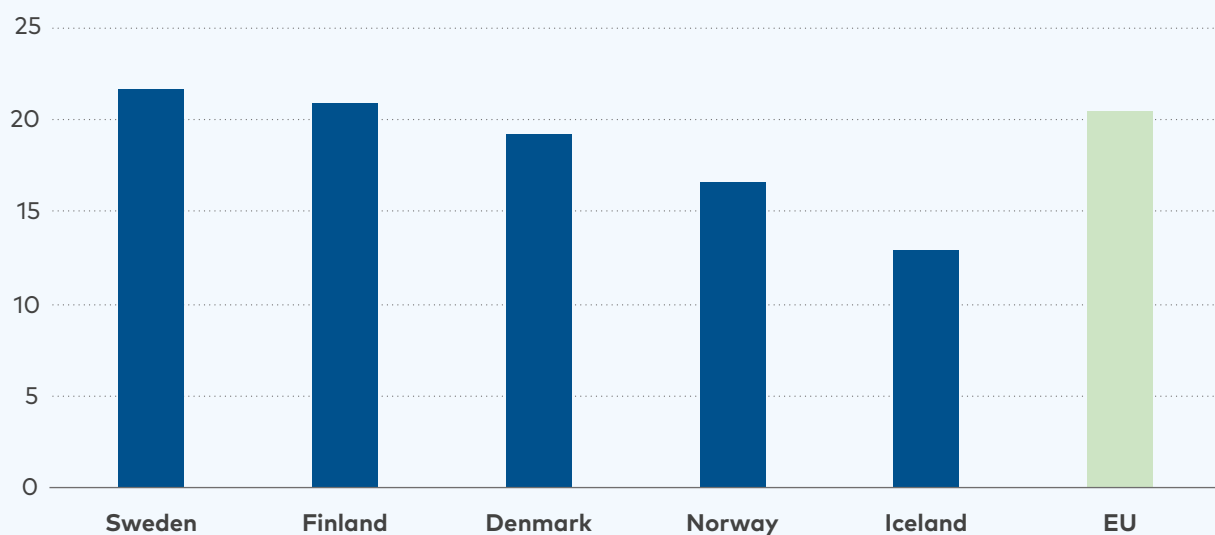


Figure 6-3: Distribution of students in STEM education. 2023. Percent. Source: Eurostat (2025)¹¹⁴

¹¹² European Commission (2025). *STEM Education Strategic Plan*. COM(2025) 89. Available [here](#).

¹¹³ 2022 for Norway and Iceland.

¹¹⁴ Eurostat (2026). Employment by detailed industry (NACE Rev.2) - national accounts [nama_10_a64_e] [Data set]. Eurostat Data Browser. Available [here](#).

Regulatory and governance barriers

Policy uncertainty and regulatory instability can create friction throughout the commercialisation process. When the rules governing R&D incentives, regulatory frameworks and taxation are subject to frequent change or political debate, both entrepreneurs and investors face difficulty planning and committing to long-term investments. This chapter examines barriers concerning instability of key policy frameworks that shape the conditions for commercialisation, and the regulatory complexity that raises the cost and risk of scaling innovative ventures.

Across the Nordic countries, commercialisation takes place within the broader policy environments that shape the conditions for entrepreneurial activity and long-term investment. Two challenges stand out as the main ones when it comes to commercialisation: the fragmentation of public support systems, which makes it difficult for innovators to navigate the available instruments, and policy uncertainty and instability, which makes it difficult for entrepreneurs and investors to plan and commit to long-term investment. Commercialisation is inherently a long-term process. Research-based ventures often require years of development before reaching commercial viability, and investors must commit capital over extended time horizons. When policies or policy signals change frequently, regulatory changes are uncertain or public funding priorities shift, planning becomes difficult for both entrepreneurs and investors. Fragmentation of public support systems further increases complexity by dispersing relevant instruments across multiple agencies and programmes, making it time-consuming and resource-intensive for innovators to identify and combine the right support at each stage of the commercialisation process. These barriers can arise both in the commercialisation and scale-up stages.

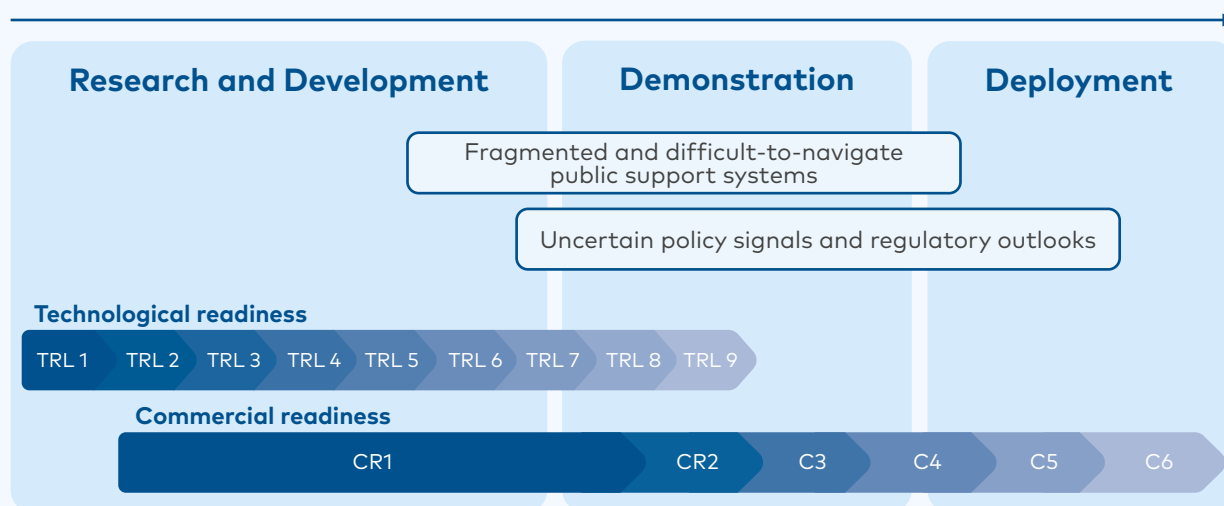


Figure 7-1: Illustration of regulatory and governance barriers on the TRL and CR scales

7.1 Fragmented and difficult-to-navigate public support systems

Across the Nordics, public support for commercialisation is spread across multiple agencies, funding instruments and ministries, often with limited coordination. Innovators struggle to understand what support is available, at which stage, and from whom. The public support landscape for commercialisation is consistently described as fragmented and difficult to navigate. While the fragmented financing systems described in chapter 5.2 concerns the availability and coordination of capital across public and private actors, the fragmentation addressed here concerns the organisation of public support systems more broadly, including the institutional architecture, the distribution of mandates across agencies, and the absence of clear pathways for innovators seeking guidance and support.

For example, in Norway, a 2017 OECD analysis identified the coordination between the Research Council of Norway and Innovation Norway as a challenge. The siloed governance of research and innovation policy makes it difficult to develop policies that span both areas, hindering joint consideration of the full range of collaboration, knowledge transfer, and co-creation possibilities between higher education institutions, industry, and the public sector.¹¹⁵ Further the commercialisation infrastructure, including technology transfer offices, science parks and incubators is described as still immature and fragmented, despite sustained efforts over the past decade to develop it. In interviews from Norway, the Research Council of Norway's mandate in relation to commercialisation is described as unclear and inefficient. One interviewee also mentioned that the European Innovation Council (EIC) Transition programme is complex, requires capacity to use, and can therefore be hard to access. When it comes to domestic funding schemes, one informant described these as narrow in scope, with a focus on predefined sectors and buzzwords such as AI and green technology, leaving less room for ventures in sectors that do not fit neatly into predefined priorities.

In Iceland, one form of fragmentation in the support system concerns the relationship between universities and research institutes: universities operate independently from research institutes that fall under different ministries, an arrangement that ERAC and the European Commission describe as not conducive to effective industry–science collaboration in a review of the Icelandic research and innovation system.¹¹⁶ This seems to be a barrier more broadly across the Nordic countries. Our interviews with informants from different Nordic countries point to a public funding landscape characterised by gaps between research funding and commercialisation funding, which create systemic discontinuities and a lack of a clear pathway for innovators. Programmes can sometimes also overlap, making it difficult to navigate. These challenges are mentioned as particularly prevalent for first-time innovators.

In 2025, Horizon Europe has published a report analysing the barriers hindering public-private collaboration within Finland's research and innovation (R&I) ecosystem.¹¹⁷ In this report, lack of professionalism at higher education institutions is highlighted as a barrier. Examples in the report include fragmented operations across TTOs and unclear and lack of standardisation of IPR practices and legal arrangements for collaboration, facility sharing and spinning-out in public sector.

¹¹⁵ Research Council of Norway International Advisory Board (2022). "Research, innovation and education: Ensuring better integration". Policy brief. Available [here](#).

¹¹⁶ ERAC/European Commission (2024). "Peer Review of the Icelandic Research and Innovation System". Available [here](#).

¹¹⁷ European Commission (2025). Support to Finland on improving R&D collaboration between research organisations and the private sector. Final report. Available [here](#).

7.2 Uncertain policy signals and regulatory outlooks

Changes and uncertainty in governmental outlooks such as policy frameworks, R&D tax incentives, and public funding priorities, create uncertainty that may dampen both entrepreneurial activity and investor confidence. General public policy also directly shapes investment decisions by influencing risk, expected returns, and time horizons. When these policy conditions are unstable or subject to frequent change, it can be more difficult for both firms and investors to commit to long-term investments.

At the European level, the Draghi report identifies regulatory barriers to scaling up as particularly onerous in the tech sector, especially for young companies. Complex and costly procedures across fragmented national systems discourage inventors from filing intellectual property rights. This prevents young companies from effectively protecting and commercialising their innovations across the EU's internal market and thus from reaching the scale needed to compete internationally.¹¹⁸ Across the Nordic countries, a range of different policy instruments are identified as relevant to commercialisation, including tax regimes, R&D incentive schemes, and regulatory frameworks. The specific instruments vary across countries, and it is not any single policy that is identified as the primary barrier, but any uncertainty and instability surrounding these instruments is described as problematic.

In Iceland, the R&D reimbursement scheme introduced in 2018, had its rates increased during the pandemic, and is described as having been crucial for company growth and innovation activity by Icelandic founders, CEOs and R&D managers.¹¹⁹ However, our interviews indicate that the government has signalled that the current level is fiscally unsustainable which creates policy uncertainty for start-ups building their innovation strategies around the scheme, even though rates have not yet been reduced. The R&D reimbursement scheme is generous compared to other countries, and an OECD report has previously noted that the tax incentives do not to a sufficient degree target smaller innovative firms.¹²⁰ Iceland also faces additional macroeconomic uncertainty: the króna continues to be viewed as a burden by most businesses, with 62 per cent reporting negative impacts, and high interest rates are cited as dampening appetite for investment in risky innovation.¹²¹

Finland offers a further illustration of how policy instability and funding cuts can undermine long-term investment in commercialisation. Finland's research and innovation system went through what a 2025 European Commission report describes as a "decay period" in the mid-2010s. Public funding for the main innovation agency Tekes, which provided grants and loans to companies and universities for R&D projects, was cut by 24% in 2016, while funding for public research institutes was reduced by 37% between 2013 and 2016. At the same time, the collaborative centres that brought together universities, research institutes and private companies to work on shared innovation challenges (the so-called SHOKs) were terminated in 2015. The key government body responsible for coordinating research and innovation policy across ministries was also weakened during this period. These disruptions left lasting marks on the relationships between public research institutions and the private sector: the same report finds evidence of "lost years" of progress and reduced capacity for this kind of public-private collaboration. Since the early 2020s, however, Finland has entered what the report calls a "repair period", with a renewed political consensus and a commitment to reach a 4 percent R&D intensity target by 2030.¹²²

118 Draghi, M. (2024). "The Future of European Competitiveness: A Competitiveness Strategy for Europe". European Commission. Available [here](#).

119 Northstack (2025). "Nýsköpunarlandið Iceland – Second Edition". Available [here](#).

120 OECD (2021) "OECD Economic Surveys ICELAND". Available [here](#).

121 Northstack (2025). "Nýsköpunarlandið Iceland – Second Edition". Available [here](#).

122 European Commission (2025). Support to Finland on improving R&D collaboration between research organisations and the private sector. Final report. Available [here](#).

Denmark has similarly sought to address the challenge of predictability in its innovation system. From interviews, stakeholders explain that budget decisions for the innovation system were previously made on a yearly basis but have now shifted to a four-year planning horizon. This is a change that interviewees describe as an improvement for the predictability of the innovation support system.

Also in Norway, uncertainty around policy is identified as a factor that can hinder investments, both in the interviews and by other stakeholders. For example, the Confederation of Norwegian Enterprise (NHO), Norway's main employer and business organisation, underlines that predictability and broad political agreement at the domestic level is a precondition when the international market is unpredictable.¹²³ NHO states that e.g. tax policy must be predictable and designed in a way that enables growth. Further, NHO says that there has also been a marked increase in the number of companies that view regulatory uncertainty as a challenge in recent years.

Regulatory requirements are mentioned in interviews as a challenge for commercialisation, and slowness of permit and regulatory approval processes is identified as a particular burden for companies that require rapid growth or are bringing new technologies to market. Beyond such regulatory barriers, our interviews also illustrate how the absence of clear political decisions can itself constitute a barrier to commercialisation. In deep-tech sectors with long time horizons and high capital requirements, investors rely heavily on government priorities as signals when assessing long-term risk. Where such signals are absent, the investment landscape remains unpredictable even if no specific regulatory or financial barrier exists. Both Swedish and Norwegian informants highlight that a key underlying barrier is not regulatory or financial in the narrow sense, but the absence of political decisions through national strategies to invest in new domestic companies. Clear political signals could reduce uncertainty from investing in risky technologies for entrepreneurs and investors, and could stimulate to better coordination between new innovations and broader public needs.

123 NHO (2025). "Norsk konkurransekraft – Veien til vekst". Available [here](#).



Summary and recommendations

The Nordic countries combine strong research capacity with weaker commercialisation outcomes, reflecting a gap between innovation inputs and the ability to scale new solutions in the market. In this report, we have identified a set of commercialisation barriers that are inhibiting commercialisation of research in the region, ultimately reducing overall economic growth. Nordic Innovation can contribute to reducing these barriers through targeted measures, with a focus on strengthening commercialisation competence, improving coordination and increasing access to specialised investors.

8.1 Strong research, weaker commercialisation outcomes

The Nordic countries combine high levels of research investment and strong innovation system performance, consistently ranking among the most innovative economies globally. Sweden, Denmark and Finland are among the top performers in international rankings, with high R&D intensity and strong public and private investment in research. Iceland also performs well relative to its size due to a generous R&D tax incentive scheme, while Norway stands out with high public spending in absolute terms but lower overall R&D intensity due to sector composition and less R&D in the private sector, particularly in industry. Despite these differences, all five countries demonstrate strong research capacity and well-developed innovation systems.

While the Nordic countries perform strongly on indicators such as research quality, collaboration and investment, they are less successful in translating this into scalable companies, market adoption and long-term value creation. Finland and Sweden score above the EU average on sales of new-to-market and new-to-firm innovations, while Denmark scores close to the EU average. Norway and Iceland score substantially below the EU average on new-to-market and new-to-firm innovations, despite investing at broadly similar levels in R&D as Denmark. This suggests that the core challenge lies not in the generation of knowledge, but in its transition to commercial application.

These commercialisation challenges are not unique to the Nordic countries but reflect a broader European pattern. The Draghi report identifies the innovation gap with the US and China as Europe's most pressing structural challenge, noting that EU companies invested EUR 270 billion less in research and innovation than their US counterparts in 2021. European venture capital markets remain significantly smaller than those of the US, and between 2008 and 2021, close to 30 percent of European unicorns relocated their headquarters abroad, the vast majority to the US. While the Nordic countries rank among Europe's strongest innovators and therefore perform well relative to the EU average, this benchmark obscures the extent to which they too lag behind global leaders. The core challenge for the Nordic countries is therefore not primarily to outperform European peers, but to close the wider gap to the US and China where much of the global competition for technology leadership is playing out.¹²⁴

¹²⁴ Draghi, M. (2024). "The Future of European Competitiveness: A Competitiveness Strategy for Europe". European Commission. Available [here](#).

8.2 Barriers to commercialisation in the Nordic countries

The analysis identifies four main categories of commercialisation barriers in the Nordic countries: university and research system barriers, financial and capital barriers, market size and human capital barriers, and regulatory and governance barriers.

The barriers do not operate in isolation. Weak commercialisation incentives and weak entrepreneurial culture in academia reduce the pipeline of commercially oriented projects entering the market. At the same time, lack of early-stage risk capital and fragmented financing systems limit the ability of these projects to progress. Even where capital is available, lack of specialised investors reduces the quality of support provided to ventures. These financial barriers interact directly with market size and human capital barriers: small domestic markets increase risk, raise capital requirements and make it more difficult to attract both investors and experienced commercial talent. The limited pool of serial entrepreneurs and commercial competence further weakens the ability of ventures to navigate fragmented financing systems and reach market validation. Regulatory and governance barriers, in particular fragmented and difficult-to-navigate public support systems, reinforce these challenges by increasing transaction costs and reducing transparency across the system. Together, this creates a self-reinforcing dynamic where weaknesses at one stage reduce the effectiveness of interventions at subsequent stages.

The relative importance of barriers varies across countries, sectors, and individual companies. Differences in industrial structure, innovation systems and market conditions mean that what is the most relevant constraint in one context may be less relevant in another. In addition, companies at different stages of the commercialisation process face different challenges, and even within the same sector, firm-specific factors such as capabilities, networks and access to capital will shape which barriers are most critical. As a result, this report does not provide a strict prioritisation of barriers in terms of overall importance. Based on our mainly qualitative data gathering, Figure 8-2 illustrate our understanding of the severity of the barriers in the Nordic as a whole and each Nordic country.



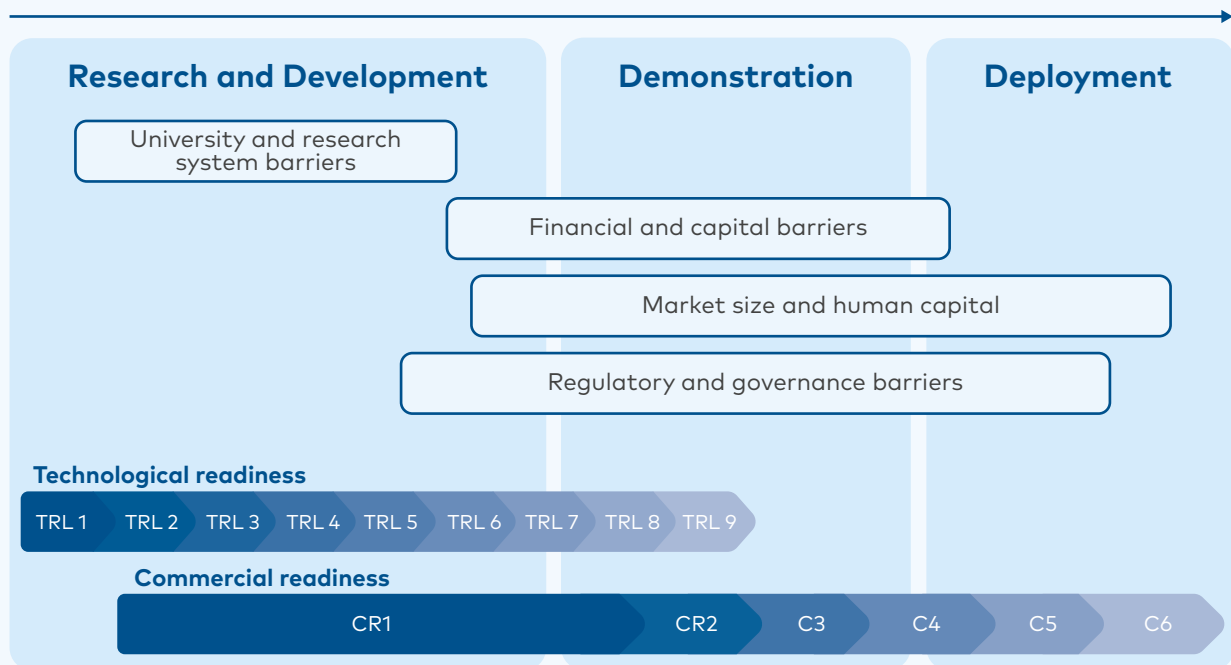


Figure 8-1: Illustration of all barrier categories on the TRL and CRI scales

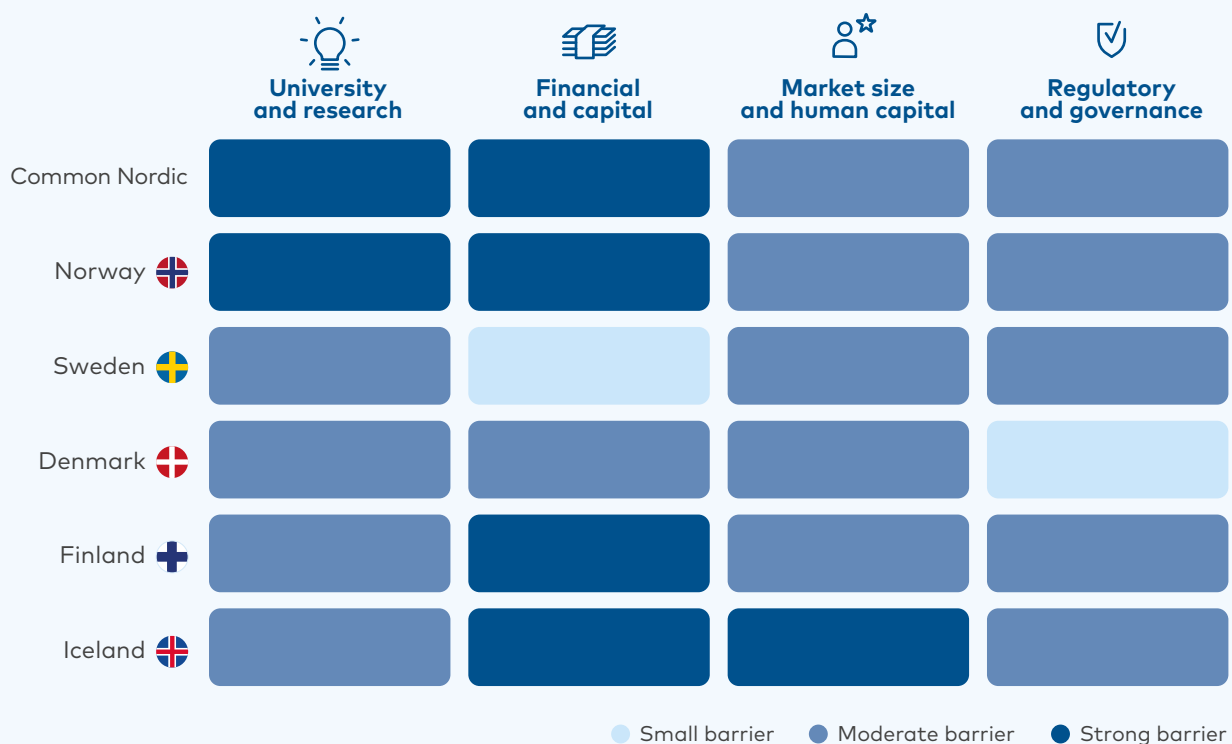


Figure 8-2: Illustration and severity of commercialisation barriers in the Nordic countries

8.3 Where can Nordic cooperation add value?

While the report does not prioritise the overall importance of barriers, some are more directly relevant for Nordic-level cooperation than others. These relate to challenges that are shared across countries and where coordination, integration or knowledge sharing at the Nordic level could reduce barriers. Such areas include fragmentation of support systems, limited market size, access to specialised capital and competence, and weak ecosystem connectivity.

It should, nevertheless, be emphasised that the scope for addressing many of these barriers through Nordic-level cooperation is limited. Many of the underlying challenges are linked to national policy frameworks, institutional structures or market conditions, and can therefore not be resolved at the Nordic level alone. The purpose of this report is hence identifying areas where Nordic cooperation may have a supporting role, and to distinguish these from barriers that are primarily national in nature.

The scope for Nordic Innovation to address the barriers to commercialisation is even more narrow than for Nordic-level cooperation in general. The space for direct intervention is constrained (both by mandate and available financing), and Nordic Innovation cannot address the root causes of most of the identified barriers. Based on our assessment, the contribution of Nordic Innovation is therefore primarily through targeted initiatives that reduce friction, improve coordination and strengthen connections across countries.

In this subchapter, we first discuss in general where Nordic-level cooperation can play a role. In subchapter 8.4, we outline our recommendations for what Nordic Innovation can do to alleviate the identified commercialisation barriers.

Fragmentation of support systems and financing structures is a shared challenge across the Nordic countries, and this can make it especially difficult for a company looking for investment and support in another Nordic country. Fragmentation can be alleviated through improved coordination, transparency and information sharing. Nordic cooperation can contribute by making support systems easier to navigate, especially for firms operating across borders, for example through clearer mapping of instruments or alignment of terminology and pathways. Over time, this may also support a more integrated Nordic market, increasing the effective market size beyond individual countries.

Several interviewees across the Nordic countries point to stronger cross-border collaboration as a way to address the constraints of small domestic markets. Interviewees across several Nordic countries argue that the region is fragmented today. Norwegian interviewees suggest that the Nordic region should position itself as a united innovation ecosystem, particularly in emerging areas such as AI. Danish interviewees point to the near-complete absence of structured Nordic collaboration networks today, and call for better connections between talent, investors and knowledge across the region. Finnish interviewees similarly raise the potential value of cross-Nordic sessions for deep tech companies to share experience and learn from each other, and Icelandic interviewees point to a structured Nordic TTO network as a cooperation that could help smaller countries access expertise and partnerships that are difficult to develop domestically.

Small domestic markets limit both demand and the availability of specialised investors and experienced talent. This creates a self-reinforcing dynamic, where limited scaling reduces the pool of experienced founders and investors. Stronger cross-border collaboration can help improve access to investors with sector expertise and facilitate knowledge sharing between companies and institutions. In particular, establishing Nordic networks for both commercialisation experts and investors are areas where we believe Nordic cooperation can add value.

A specific dimension of this concerns the public sector, which is a major purchaser of goods and services in all five Nordic countries and an important first customer for many innovative ventures, particularly within technology. Solutions developed for one Nordic public sector, including things such as digital platforms, e-government services or health technology, often have strong potential to scale to other countries. This is particularly true in the Nordic region given the similarities in administrative structures and digital maturity. Today, however, public procurement is organised almost entirely at the national level, meaning that a solution validated by one Nordic government does not automatically gain access to comparable markets in neighbouring countries. Stronger Nordic coordination, for example through a mix of aligned standards, similar requirements or even joint procurement initiatives where feasible, could potentially expand the addressable market for innovative suppliers and reduce the disadvantage of small domestic demand.

University and research system barriers are broadly shared across the Nordic countries, but are rooted in national institutional frameworks. Weak commercialisation incentives and a weak entrepreneurial culture in academia reflect how universities are governed, how careers are structured, and how intellectual property is regulated at the national level. At the same time, Nordic cooperation can play a complementary role by supporting knowledge sharing on best practices, strengthening collaboration between TTOs and research institutions, and increasing awareness of commercialisation pathways among researchers. While such initiatives will not address the underlying incentive structures, they can help reduce fragmentation and improve access to expertise.

In contrast, policy uncertainty is largely driven by national policy choices and institutional frameworks. These challenges are therefore more country-specific and less directly addressed through Nordic cooperation.

8.4 Recommendations for Nordic Innovation

Based on our analysis, we present five areas where Nordic Innovation can add value by addressing shared and cross-border barriers to commercialisation in the Nordic countries. Overall, Nordic Innovation can play an important role as a match maker by connecting ventures with relevant expertise, capital and partners across national borders. Given the fragmented nature of the Nordic commercialisation ecosystem and the limited scale within each country, more systematic matching can help ensure that existing resources are better utilised at the regional level. This role includes facilitating connections between startups and experienced commercialisation experts, linking companies with specialised investors, and enabling collaboration between research institutions, corporates and technology transfer offices.

Strengthening access to commercialisation competence

We see room for Nordic Innovation to strengthen the access and utilisation of commercialisation competence in the region by establishing and facilitating access to a shared Nordic pool of commercialisation experts. The commercialisation experts could include experienced CEOs, sales professionals, and other with relevant start-up expertise. We suggest that this is operationalised by Nordic Innovation developing and supporting a cross-border network that connects startups with experienced entrepreneurs with commercialisation competency.

Strengthening coordination and reducing fragmentation

We recommend that Nordic Innovation strengthens coordination and reduces fragmentation in the Nordic commercialisation system by establishing and regularly updating a Nordic one-stop overview of funding instruments, clearly mapping who supports what at which stage across countries. This would improve transparency, reduce search costs and make support systems easier to navigate, particularly for firms operating across borders.

Improving access to specialised capital and investors

In order to improve access to specialised capital and investors, Nordic Innovation should consider supporting the development of Nordic thematic investor networks. This could be particularly relevant within tech, health and the green transition. Such network could help connect ventures with investors who have the relevant sector knowledge and long-term perspective required for commercialisation.

Strengthening commercialisation ecosystem connectivity and scale

We recommend that Nordic Innovation strengthens ecosystem connectivity and scale by building structured Nordic networks that link TTOs, investors, corporates and startups across countries. This can improve knowledge flows, increase access to partners and reduce fragmentation in the commercialisation system. In addition, Nordic Innovation should facilitate joint Nordic initiatives in emerging sectors, such as AI and green technologies, to build critical mass and strengthen the region's ability to scale new solutions. We recommend that such efforts are targeted by sector and built around networks that connect ventures with competent investors, rather than designed as broad initiatives for the start-up ecosystem as a whole.

Supporting knowledge sharing and best practices

We recommend that Nordic Innovation supports knowledge sharing and dissemination of best practices across the Nordic commercialisation system. This includes facilitating the exchange of best practices on commercialisation support systems and instruments and supporting benchmarking and learning between countries on what works at different stages of the commercialisation pipeline. We further recommend that Nordic Innovation promotes data sharing and monitoring of commercialisation outcomes across the Nordics, to improve the evidence base and support more informed policy development.

References

- Ali-Yrkkö, J., Cherif, R., Hasanov, F., Kuosmanen, N., & Pajarinen, M. (2021). Knowledge Spillovers From Superstar Tech-Firms: The Case of Nokia. IMF Working Paper WP/21/258. [Knowledge Spillovers From Superstar Tech-Firms: The Case of Nokia, WP/21/258, October 2021](#)
- ARENA. (2014). Commercial readiness index for renewable energy sectors. Australian Renewable Energy Agency. <https://arena.gov.au/assets/2014/02/Commercial-Readiness-Index.pdf>
- Bergdahl, A., Falk, E., & Närfelt, K.-H. (2025). "Uppdrag att samordna och effektivisera det offentliga stödet till startups och scaleups: Delrapportering av regeringsuppdraget KN2024/01060". Vinnova – Sveriges innovationsmyndighet.
- Bjerregaard, S. (2025). "Reforms can make Greenland's economy more self-sustaining". Danmarks Nationalbank, Analysis No. 11. <https://www.nationalbanken.dk/media/ixmdOnrj/reforms-can-make-greenlands-economy-more-self-sustaining.pdf>
- Bloch, C. W., Fuglsang, S., Graversen, E. K., Norn, M.-T., Schäfer Bak, M., & Pedersen, A. V. (2024). Commercialization of research from the social sciences, humanities and arts (SSHA) at universities: A scoping study: Existing insight and current practices . CFA Scientific Reports, 15(2), 1–33. <https://doi.org/10.7146/cfasr.v15i2.156125>
- Bohmann, E., Langa, D., Nast, C., Nechaev, I. & Tian, Y. (2022). "Norwegian Commercialization of Academic Research: A Policy Brief". *CFA Scientific Reports*, 15(2), 1–33
- Borlaug, S. B. & Jacob, M. (2013). "Who commercialises research at Swedish universities and why?". *Science and Public Policy*, 40(4), 517–530.
- Business Finland (2023). "Technology Transfer Initiative: Final Report". European Investment Bank.
- Business Finland (2025). "Research to Business Programme Evaluation". Report 13/2025.
- Copenhagen Economics. (2026). "Developing a thriving innovation and venture capital ecosystem in Oslo". Copenhagen Economics.
- Datta et al. (2014). Understanding commercialization of technological innovation: taking stock and moving forward. *R&D Management*, 44(3), 247–260.
- Draghi, M. (2024). "The Future of European Competitiveness: A Competitiveness Strategy for Europe". European Commission.
- EIB (2025). Investment Report 2024/2025: Innovation, integration and simplification in Europe.
- EIFO. (2025). "Danish Venture Capital Market Analysis 2024". Danish Growth Fund.
- Ejermo, O. & Toivanen, H. (2018). "University invention and the abolishment of the professor's privilege in Finland". *Research Policy*, 47(4), 814–825.
- EPO (2024). "The Role of European Universities in Patenting and Innovation". European Patent Office.
- ERAC/European Commission (2024). "Peer Review of the Icelandic Research and Innovation System".
- EURAXESS (2024). "Country Profile: Faroe Islands". Retrieved 15.05.2026 at: [EURAXESS \(2024\). "Country Profile: Faroe Islands"](#).
- European Commission (2024). "Support for Finland: Reforming the Cooperation Framework between Universities and Research Institutions and Business".

- European Commission (2025). STEM Education Strategic Plan. COM(2025) 89.
- European Commission (2025). Support to Finland on improving R&D collaboration between research organisations and the private sector. Final report. European Commission: Directorate-General for Research and Innovation.
- European Commission. (2025). "3rd EU-Faroe Islands Joint Committee meeting under Horizon Europe". Directorate-General for Research and Innovation. https://research-and-innovation.ec.europa.eu/news/all-research-and-innovation-news/3rd-eu-faroe-islands-joint-committee-meeting-under-horizon-europe-2025-04-09_en
- European Commission. (2025). "European Innovation Scoreboard 2025: Methodology report". European Commission.
- European Commission. (2025). "European Innovation Scoreboard 2025 – Country profile Norway". European Commission.
- European Commission. (2025). "European Innovation Scoreboard 2025 – Country profile Sweden". European Commission.
- European Commission. (2025). "European Innovation Scoreboard 2025 – Country profile Denmark". European Commission.
- European Commission. (2025). "European Innovation Scoreboard 2025 – Country profile Iceland". European Commission.
- European Commission. (2025). "European Innovation Scoreboard 2025 – Country profile Finland". European Commission.
- European Commission. (2026). "European Innovation scoreboard".
- European Investment Bank (2025). Investment Report 2024/2025. European Investment Bank.
- Foreign Policy. (2025). "Iceland: Growth and economic transformation". Foreign Policy.
- Forskningsrådet. (2025). "Hvilke næringer driver næringslivets FoU-intensitet". Norges Forskningsråd.
- Forskningsrådet. (2025). "Indikatorrapporten". Norges Forskningsråd.
- Forskningsrådet. (2025). "Økonomiske trender". Norges Forskningsråd.
- Hajighasemi, A., Oghazi, P., Aliyari, S. & Pashkevich, N. (2022). "The impact of welfare state systems on innovation performance and competitiveness: European country clusters". *Journal of Innovation & Knowledge*, 7(4), 100236.
- Hvide, H. K. & Jones, B. F. (2018). "University innovation and the professor's privilege". *American Economic Review*, 108(7), 1860–1898.
- Jagusiak-Kocik, M and Janasik, M. (2023). "Commercialisation of Research Results – Overview of Assumptions and General Definitions". 268-277.
- Markman et al. (2008). Research and Technology Commercialization. *Journal of Management Studies*, 45(8), 1401–1423.
- Menon (2026) "Heading for the 4 percent target". Business Finland. REPORT 14/2025.
- Menon Economics (2018). "Incentives for Research Commercialisation". Menon publication Nr. 9/2018
- Ministry of Higher Education and Science. (2026). "Research and innovation areas". Danish Ministry of Higher Education and Science.

- NASA (2023). "Technology Readiness Levels". Article dated September 27th, 2023.
Read April 29th, 2026: [Technology Readiness Levels - NASA](#)
- NHO (2025). "Norsk konkurransekraft – Veien til vekst". Næringslivets Hovedorganisasjon.
- Nordic Innovation, Innovative Solutions for 2030. Read April 27th 2026: [Innovative Solutions for 2030 | Nordic Innovation](#)
- Nordregio (2024). "State of the Nordic Region 2024", ch. 8. Business perspective on the economy. Nordregio. <https://pub.nordregio.org/r-2024-13-state-of-the-nordic-region-2024/chapter-7-business-perspective-on-the-economy.html>
- Nordregio. (2025). Higher education beyond major urban areas in the Nordics: Challenges and opportunities (Section 3.2: Åland University of Applied Sciences, Finland). <https://pub.nordregio.org/r-2025-10-higher-education-beyond-major-urban-areas-in-the-nordics/3-2-aland-university-of-applied-sciences-finland.html>
- Northstack (2025). "Nýsköpunarlandið Iceland – Second Edition". Northstack.
- OECD (2013). "Commercialising Public Research: New Trends and Strategies". OECD Publishing.
- OECD (2017). "OECD Reviews of Innovation Policy: Norway". OECD Publishing.
- OECD (2021) "OECD Economic Surveys ICELAND". OECD Publishing.
- OECD (2021). "Fostering innovation in Iceland for the digital era". OECD Publishing.
- OECD (2023). "Grow and Go? Retaining Scale-ups in the Nordic Countries". OECD Regional Development Papers, No. 51.
- OECD. (2025). "Gross domestic spending on R&D". Retrieved 30.04.2026: [Gross domestic spending on R&D | OECD](#)
- Perkmann, M., Tartari, V., et al. (2013). "Academic engagement and commercialisation: A review of the literature on university–industry relations". Research Policy, 42(2), 423–442.
- Rannís. (2025). "Research and Development Expenditures in Iceland Continue to Increase". Rannís – The Icelandic Centre for Research.
- Research Council of Norway International Advisory Board (2022). "Research, innovation and education: Ensuring better integration". Recommendations from the Research Council of Norway's International Advisory Board . Issue 6 / September 2022
- Shuijing Jie, Harms, R., Groen, A. J., & Jones, P. (2021). "Capabilities and Performance of Early Internationalizing Firms: A Systematic Literature Review". Journal of Small Business Management.
- Solomon, S., Bendickson, J. S., Liguori, E. W. & Marvel, M. R. (2021). "The effects of social spending on entrepreneurship in developed nations". Journal of Business Research, 127, 413–425.
- State Treasury (2025). The national plan to raise R&D. Published February 3rd 2022. Updated December 10th 2025. Read April 30th 2026: [Central government debt management – The national plan to raise R&D funding](#)
- Statistics Sweden. (2024). "R&D activity in Sweden grows in 2023". Statistics Sweden (SCB).
- Swedish Research Council. (2021). "The Swedish Research Barometer 2021". Swedish Research Council (Vetenskapsrådet).
- Taalbi, J. (2025). "Innovation with and without patents – an information-theoretic approach". Scientometrics, 130, 4879–4897

Tillväxtanalys. (2026). "Riskkapital för clean tech". Myndigheten för tillväxtpolitiska utvärderingar och analyser.

University of Helsinki (2025). "A boost for Finland from research commercialisation – "The government should definitely allocate RDI funding to this"". Read 30th April 2026: <https://www.helsinki.fi/en/news/innovations/boost-finland-research-commercialisation-government-should-definitely-allocate-rdi-funding>

WIPO. (2025). "Patents highlights". World Intellectual Property Organization.

WIPO. (2026). "GII 2025 at a glance". World Intellectual Property Organization.
Read 30th April 2026: <https://www.wipo.int/web-publications/global-innovation-index-2025/en/gii-2025-at-a-glance.html>



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