Nordic Council of Ministers

HOW CAN NORDIC COMPETITIVENESS BENEFIT FROM GENDER EQUALITY?



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This publication is also available online in a web-accessible version at:
https://pub.norden.org/temanord2026-527

Summary

The future competitiveness of the Nordic region will largely depend on how well it manages to develop, utilise and renew its human capital. Productivity, innovation and adaptability depend on the right skills being available, talent being utilised where it is most needed and investments leading to the greatest possible value creation. This publication starts from the premise that several of the mechanisms that influence these factors are also impacted by gender equality. Gender equality is therefore a key issue for the region's economic efficiency and competitiveness.

The analysis shows that unequal structures can lead to inefficient use of resources within the economy. When educational choices, career choices, career paths or access to capital are influenced by social norms rather than skills, there is a risk that the labour market fails to allocate talent where it is most needed. The consequence is lower productivity, reduced innovation capacity and a less efficient utilisation of the labour force. To fully harness the skills and innovation capacity of the population, gender equality must be regarded as an integral dimension of collective competitiveness.

This is particularly evident within the digital transformation. Demand for advanced competencies in technology and artificial intelligence (AI) is growing rapidly; meanwhile, women remain under-represented in a number of sectors in which future growth is expected. At the same time, AI systems risk reproducing historical biases if they are developed and deployed without sufficient awareness of how data and algorithms influence decision-making. The capacity to both broaden the skill base of the labour force and develop high-quality AI systems is therefore a matter of competitiveness. Similarly, the green transition will confer significant demands in terms of innovation capacity and strategic decision-making. Research indicates that broader representation in leadership positions can contribute to better decision-making and that an overly narrow focus on technical innovation risks overlooking other types of innovation that are important for the transition. Making more effective use of skills and experience can thus strengthen both transition capacity and long-term growth.

The publication also shows that welfare and social care should be understood as part of the infrastructure of the economy. Services such as childcare, eldercare and parental insurance influence the labour supply, availability of skills and opportunities for people to participate fully in working life. The uneven distribution of care responsibilities and poorly functioning welfare systems limit the potential of certain sections of the labour force. At the same time, demographic changes are

making the supply of skilled labour within health and social care an increasingly relevant issue in terms of competitiveness, with men also needed to make up part of the labour force in the sector.

The overall conclusion of the publication is that the competitiveness of the Nordic region can be strengthened by making better use of the skills, innovation capacity and labour force that already exist within society. From this perspective, gender equality can contribute to reducing inefficiency, improving the allocation of talent and strengthening institutions that drive long-term productivity, innovation and economic development.

Summary of key messages

- **Access to cutting-edge digital expertise in the Nordic region is limited by the under-utilisation of the available talent pool.** The under-representation of women in STEM courses, technology-intensive professions and AI-related sectors means that parts of the potential talent pool remain untapped.
- **Competitiveness is not just about educating more people but about improving the match between skills and job roles.** When education and career choices are influenced by gender-based norms, the capacity of the labour market to allocate talent based on where it is most needed is reduced.
- **AI systems are only as good as the data and assumptions underpinning them.** If algorithms are trained on historical patterns characterised by inequality, they risk undermining, rather than improving, recruitment, resource allocation and innovation.
- **The competitiveness of the green transition will be determined not only by the scale of investments but also the nature of decision-making.** When strategic priorities are set by groups with limited representation, there is a risk of important perspectives, skills and opportunities being overlooked.
- **Gender representation in leadership roles can contribute to better decision-making during the green transition.** Research suggests that organisations with more balanced representation are more likely to incorporate long-term and sustainability-related perspectives in their strategic decisions.
- **An overly narrow definition of innovation risks limiting the potential of the green transition.** A focus on technical innovation and patents tends to obscure social, organisational and service-based innovations, which are also crucial to the green transition.

- **Care and welfare are a productive investment in society, not just a public expenditure.** Childcare, eldercare and other welfare services contribute to a social infrastructure that enables people to participate in working life and develop their skills.
- **The distribution of care work affects the labour supply throughout the human life cycle.** The fact that women, to a greater extent than men, adapt their working hours, career choices and labour market participation according to their care responsibilities means that talent and skills are not always deployed where they provide the greatest value.
- **The supply of skilled labour in the welfare sector is in itself a matter of competitiveness.** Demographic changes are increasing the demand for labour in health and social care, making a broader recruitment base and reduced gender segregation strategically important for the sustainability of welfare systems.



Introduction

The competitiveness of Europe and the Nordic region is currently a key topic in political discussions and regional cooperation. The issue features prominently on the agenda in a number of contexts, not least within Nordic cooperation. Denmark and the Faroe Islands hold the presidency of the Nordic Council of Ministers for 2026, with competitiveness highlighted as a priority area. The focus is on how favourable conditions in the Nordic countries can help to further strengthen the competitiveness of the Nordic region and the rest of Europe.

Gender equality has long been an integral part of the Nordic social model and has played a significant role in the region's economic development. Well-developed welfare systems, including childcare and parental leave schemes, have enabled many women to participate in the labour market, which in turn has boosted productivity and growth. Today, there is growing interest in how gender equality and other social dimensions contribute to economic competitiveness, in addition to being important goals in their own right. For the Nordic region, this may present an opportunity to build on an established strength at a time of increased global competition.

At the same time, a comprehensive effort is underway to analyse how competitiveness can be strengthened at the European level. Mario Draghi's report for the European Commission has attracted considerable attention, and within the framework of Nordic cooperation, Copenhagen Economics has been commissioned to conduct a study of the economic conditions within the region.[1] These initiatives are focused on innovation, productivity and investment, amongst other things, and will provide important insights into the challenges and opportunities facing Europe and the Nordic region.

1. Mario Draghi, *The Future of European Competitiveness: A Competitiveness Strategy for Europe (Part A)* (European Commission, 2024); see also Nordisk Ministerråd, *Norden 2026: Forbundne i skiftende tider: Danmarks og Færøernes formandskab for Nordisk Ministerråd 2026* [Nordic Region 2026: United in changing times: Denmark and the Faroe Islands' Presidency of the Nordic Council of Ministers in 2026], PolitikNord 2025:719 (Nordiska ministerrådet, 2025).

This publication aims to complement the aforementioned analyses by highlighting the importance of gender equality for competitiveness. It is premised on the assertion that many of the historical characteristics of the Nordic model – including a relatively high level of gender equality – represent not only something to be safeguarded but an opportunity for further development that can deliver greater competitive advantage in the future. By highlighting these links, the Nordic Council of Ministers for Gender Equality and LGBTI aims to offer new perspectives on how the competitiveness of the Nordic region can be strengthened, focusing on three areas:

1. **The importance of the digital transformation,**
2. **The green transition of industry and working life, and**
3. **Welfare and social care as social infrastructure.**

The report has been produced by NIKK – Nordic Information on Gender – a Nordic collaborative body under the Nordic Council of Ministers. The text was written by Jimmy Sand, an analyst at the Swedish Secretariat for Gender Research, where NIKK is based.

The publication is largely based on three working papers commissioned by NIKK:

Ulrika Ahrsjö, a researcher in economics at Uppsala University, has analysed how gender equality affects labour force participation, skills allocation and, consequently, growth and competitiveness.

Ericka Johnson, a professor at Tema Genus at Linköping University, has highlighted how AI can both reproduce and counteract inequality, using examples from the Nordic countries.

Ylva Saarinen, an independent consultant, has summarised research on the links between gender equality, innovation and GDP, and how they are shaped by policy and norms.



The importance of the digital transformation

The digital transformation will be a key driver of the future competitiveness of the Nordic region and the rest of Europe. Investments in digital infrastructure, research, innovation and skills are seen as crucial to strengthening both the business sector and the public sector. However, the *ways* and *extent* to which they can actually contribute to competitiveness depends on how the labour force and knowledge are mobilised and utilised in practice, and gender-related norms and structures of inequality have a major impact in this regard. The importance of gender equality for competitiveness can be understood here through two questions:

1. **How can the need to access digital skills be met?**
2. **How can the quality of AI-based systems be improved?**

Key messages of the section

- **Access to cutting-edge digital expertise in the Nordic region is limited by the under-utilisation of the available talent pool.** The under-representation of women in STEM courses, technology-intensive professions and AI-related sectors means that parts of the potential talent pool remain untapped.
- **Competitiveness is not just about educating more people but about improving the match between skills and job roles.** When education and career choices are influenced by gender-based norms, the capacity of the labour market to allocate talent based on where it is most needed is reduced.
- **AI systems are only as good as the data and assumptions underpinning them.** If algorithms are trained on historical patterns characterised by inequality, they risk undermining, rather than improving, recruitment, resource allocation and innovation.

Access to skills

There is already significant demand for labour and advanced skills in STEM fields (science, technology, engineering and mathematics), and this is expected to increase in line with the trend toward further digitalisation. For the Nordic region, this raises a key challenge in terms of competitiveness: ensuring a sufficient and well-matched supply of skills. Overcoming this challenge will require measures to address the fact that sections of the potential labour force – for example, women, but also other groups such as people from migrant backgrounds – do not participate fully in key sectors of the future. Were they to do so, it would lead to more efficient use of resources.

Research shows that a high rate of labour force participation, particularly among women, has been key to the growth of the Nordic economies.[2] It also demonstrates the benefits to economic growth and productivity when talent is allocated on the basis of ability rather than being constrained by gender-based norms.[3] At the same time, these same social norms and expectations shape individuals' education and career choices, contributing to a persistent division between men and women with regard to the professional sectors and organisational levels they occupy.[4] The result is that the economy fails to match the right skills to the right roles – a problem that is particularly evident at a time when there is significant demand for cutting-edge digital expertise. Transparency over pay setting can also contribute to more effective skills matching in the labour market. Studies indicate that greater pay transparency can strengthen organisations' ability to attract, retain and develop talent, whilst also reducing the risk of skilled workers leaving their jobs due to a perception of unfairness.[5]

Research into initiatives aimed at increasing the proportion of girls and women in STEM also shows that measures to address the structures that shape educational and career choices often have a greater impact than those that focus solely on individuals' attitudes or self-perceptions. Studies indicate, for example, that educational methods, learning environments and the role of teachers are more important than inspiration days and other isolated initiatives designed to promote the motivation or interest of individuals.[6] Educational and career choices are thus shaped by the interplay between individual preferences and structural conditions, which relates to how education systems and labour markets are organised and prevailing notions of competence.[7]

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2. Claudia Olivetti & Barbara Petrongolo, "The Evolution of Gender Gaps in Industrialized Countries," *Annual Review of Economics* 8, no. 1 (2016): 405–34.
3. Chang-Tai Hsieh et al., "The Allocation of Talent and U.S. Economic Growth," *Econometrica* 87, no. 5 (2019): 1439–74.
4. Candace West & Don H. Zimmerman, "Doing Gender," *Gender & Society* 1, no. 2 (1987): 125–51; Maria Charles and David B. Grusky, *Occupational Ghettos: The Worldwide Segregation of Women and Men* (Stanford University Press, 2004).
5. Christine Aumayr-Pintar & Marianna Baggio, *Taking Stock: Further Experiences in Gender Pay Transparency Implementation and Effectiveness*, Eurofound research paper (Publications Office of the European Union, 2025).
6. Wenhao Yu et al., "Interventions for Gender Equality in STEM Education: A Meta-analysis," *Journal of Computer Assisted Learning* 40, no. 6 (2024): 2558–73.
7. Ulrika Jansson & Jimmy Sand, *Genusperspektiv på framtidens högteknologiska arbetsliv: En nordisk forskningsöversikt om utbildningsval inom STEM (Science, Technology, Engineering and Mathematics)* [A gender perspective on the high-technology working life of the future: A Nordic research review of educational choices in STEM (Science, Technology, Engineering and Mathematics)], TemaNord 2021:518 (Nordiska ministerrådet 2021).

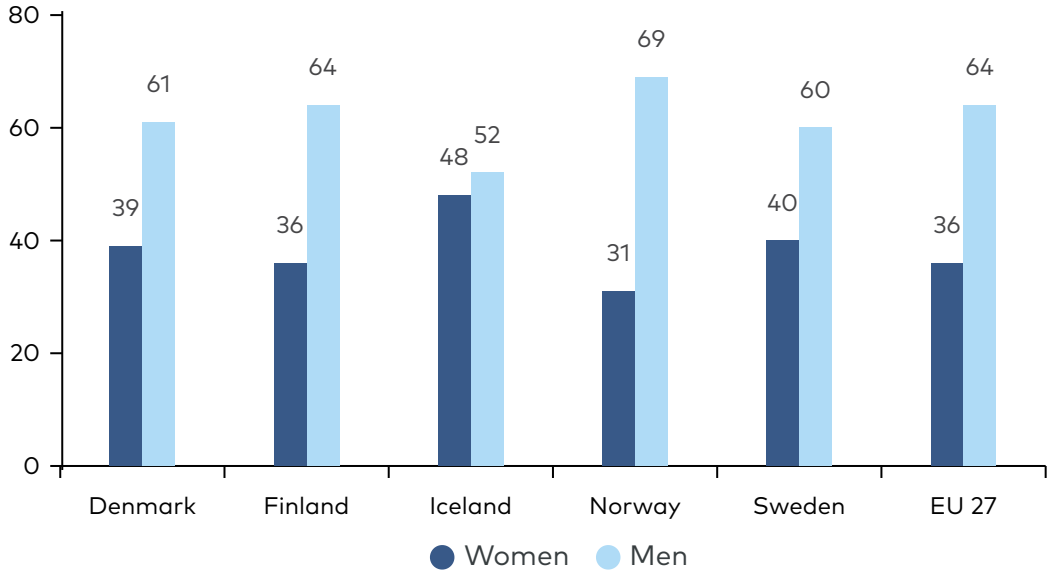


Figure 1. Share of women and men (in percent) among graduates from STEM-related study programmes in the Nordic countries and the EU. Eurostat, 2024.

Women are under-represented in STEM-related professions and in research and development (R&D) within high-tech sectors. It is well established that R&D investment is largely channelled into these sectors, which means that existing disparities between women and men in terms of access to technologically advanced professions and resources are perpetuated.[8] Furthermore, the start-up ecosystem – particularly in technology-intensive sectors – is dominated by male founders; capital and business support, meanwhile, is even more unevenly distributed between men and women.[9] Overall, this points to a system in which talent is not fully utilised, with inequality thus contributing to reduced competitiveness.

The increase in digitalisation, not least through the proliferation of AI, risks further reinforcing these patterns. On average, women make less use of AI in their working lives than men and are less likely to have access to skills development relating to new technologies.[10] A partial explanation lies in the gender segregation of the labour market, with women being more likely to work in care and service

8. Wojciech Chmielewski et al., "Linking R&D Expenditure to Labour Market and Economic Performance: Empirical Evidence from the European Union," *Sustainability* 17, no. 14 (2025): 6595; Katherina Kuschel et al., "Stemming the Gender Gap in STEM Entrepreneurship – Insights into Women's Entrepreneurship in Science, Technology, Engineering and Mathematics," *International Entrepreneurship and Management Journal* 16, no. 1 (2020): 1–15.
9. Rambøll Management Consulting, *Kartläggning av det företagsfrämjande Systemet i Sverige* [A survey of the business support system in Sweden], Info 0601 (Tillväxtverket, 2015), OECD, *The Missing Entrepreneurs – Inclusive Entrepreneurship Policy: Country Assessment Notes: Sweden* (OECD Publishing, 2025); Rajeev K. Goel & Michael A. Nelson, "Entrepreneurship Gender Dynamics: An International Study of Firm Innovation Behavior," *International Entrepreneurship and Management Journal* 22, no. 1 (2026): 25.
10. "Connected Women in AI," Connected Women in AI, accessed May 12, 2026.

professions, whilst men dominate technology-oriented professions. However, workplace norms are also a factor, with perceptions over men's and women's technical skills or interest in technology influencing both recruitment and skills development.[11] There is a related challenge concerning the parts of the economy that are included in analyses of technological development and innovation. Research into automation and AI has largely focused on industrial production and technologically advanced sectors, whilst female-dominated sectors such as healthcare, education and services have received limited attention.[12]

Labour force participation and economic growth

In many high-income countries, the employment rate among women has risen from about 50–60 per cent to over 70 per cent in the post-war period, with particularly high levels in the Nordic countries. Research also suggests that a better match between individuals' skills and occupations has had a very significant impact: in the US, 20–40 per cent of GDP growth per capita between 1960 and 2010 can be explained by the fact that women and various minority groups have had more opportunities to work in occupations that match their skills. There is also research suggesting that the relationships between gender equality, economic growth and digital infrastructure (*Information and Communications Technology*, ICT) operate in a virtuous cycle: improved gender representation drives GDP growth per capita, which in turn drives ICT investment, which contributes to further improvements in gender representation – but only if the right conditions are in place.



Further reading

The Evolution of Gender Gaps in Industrialized Countries

The Allocation of Talent and U.S. Economic Growth

ICT-Driven Disruptive Innovation Nurtures Un-Captured GDP – Harnessing Women's Potential as Untapped Resources

11. Joan Acker, "Hierachies, Jobs, Bodies: A Theory of Gendered Organizations," *Gender & Society* 4, no. 2 (1990): 139–58.
12. Inga Sabanova, *Changing Working Lives: Women and Automation in the Labour Market*, Competence Centre on the Future of Work (Friedrich Ebert Stiftung, 2025).



Quality in AI-based systems

Various AI-based solutions are being proliferated in both the public and private sectors, where they are increasingly influencing decisions on resource allocation, recruitment and prioritisation. This may have far-reaching consequences, not least because AI is trained on historical data – and the historical data used is largely the result of decades of structural inequality. Within recruitment, which aims to match the right skills to the right job, such systemic biases can hamper competitiveness. If such biases result in women and other under-represented groups being systematically excluded or undervalued, it will lead to the inadequate allocation of talent.

The rapid spread of AI may result in systems presented as objective and neutral reproducing gender-related norms that hinder innovation – unless these systems are developed and implemented with due care. For example, research has shown that scientific articles with exclusively female authors receive, on average, fewer citations than comparable articles exclusively by male authors, suggesting that women's ideas face higher barriers to acceptance within established networks.[13] There are specific examples of consequences of the risks associated with AI bias. In the City of Gothenburg, the distribution of school placements based on algorithms led to outcomes that were criticised for systematically disadvantaging certain

13. Marlène Koffi, "Innovative Ideas and Gender (In)Equality," *American Economic Review* 115, no. 7 (2025): 2207–36.

groups – which risks reinforcing unequal access to education, rather than promoting talent independent of background.[14] Here, it is clear how gender – but also other factors such as socio-economic status or migrant background – shapes the historical data on which AI systems are trained, and this bias results in the reduced performance of the systems.[15]

At the same time, development show that these outcomes are not inevitable. AI systems are malleable, and there is a growing number of initiatives aimed at identifying and counteracting bias. Within the field of research, for example, an EU project has investigated how AI can be used to improve recruitment processes by focusing on competence over identity markers. In the business sector, there are examples of organisations in the Nordic region developing tools for merit-based selection processes or using AI to scale up mentoring schemes and thereby broaden access to career support. At the same time, there are currently efforts to address the knowledge base of the systems themselves, for example through the development of more inclusive training data and tools for organisational analysis. Public initiatives are therefore being undertaken to counteract bias, but these still only represent a small proportion of total investment in AI.[16]

These examples illustrate a key point of principle: AI is not deterministic when it comes to inequality and its consequences. Algorithms are, as STEM researcher Cathy O'Neil has put it, "opinions embedded in code" – and opinions can be challenged, revised and reformulated.[17] The question, therefore, is not *if* AI should be used but *how* it is used. It may be crucial to the competitiveness of the Nordic region that the initiatives mentioned above do not remain merely marginal additions to an otherwise unquestioned technological development.

14. Simon Vinge & Maja Fjaestad, eds., *Algorithmic Rule: AI and the Future of Democracy in Sweden and Beyond* (Foundation for European Progressive Studies; FEPS, 2025); see also Sascha Granberg et al., "Sweden's Suspicion Machine," *Lighthouse Reports*, November 27, 2024.
15. For further examples, see Jeff Larson et al., "How We Analyzed the COMPAS Recidivism Algorithm," *ProPublica*, May 23, 2016; Joy Buolamwini & Timnit Gebru, "Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification," *Proceedings of Machine Learning Research*, no. 81 (2018): 1–15; *Amazon Scrapped "sexist AI" Tool*, October 10, 2018; "Artificial Intelligence and Gender Equality," UN Women, June 28, 2024; Payal Arora & Weijie Huang, *Gender Data: What Is It and Why Is It Important for the Future of AI Systems?*, Competence Centre on the Future of Work (Friedrich Ebert Stiftung, 2025).
16. Sophia Ivarsson et al., *AI to Promote Gender Equality: Adressing Gender Inequality through AI – a Learning Summary* (Vinnova, 2023); Sophia Ivarsson, *Artificiell intelligens och de jämställdhetspolitiska målen: Utmaningar och möjligheter för jämställdhetspolitiken* [Artificial intelligence and gender equality policy objectives: Challenges and opportunities for gender equality policy], VR:2026:10 (Vinnova, 2026).
17. Cathy O'Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (Crown, 2016).



Learning examples to counteract bias

The DigiKULT research group at the Norwegian University of Science and Technology (NTNU) in Trondheim has investigated how AI can be used to reduce bias in recruitment as part of the EU's BIAS project, with a focus on prioritising skills over gender and ethnicity. The Icelandic company OneTeam uses large language models to rank job applications based on merit rather than identity markers. Mai Mentor in Sweden uses AI to scale up mentoring and coaching programmes to groups that would not otherwise have had access to them. The Danish network Connected Women in AI is collaborating with Microsoft, Finansforbundet and Copenhagen Airports A/S to offer women training in AI. The Finnish initiative Elements of AI – a collaboration between the University of Helsinki and Reaktor – trained one million students in basic AI skills in 2018, with more than 60 per cent of the Finnish participants being women. Initiatives such as the Vinnova-funded Fair AI Data, a spin-off from Linköping University, and InspireLab at KTH demonstrate that there is a growing Nordic ecosystem centred on efforts to challenge algorithmic bias.



The green transition of industry and working life

The green transition is increasingly described as a growth driver, combining climate policy, industrial development, energy systems and innovation.[18] At the European level, there is an emphasis on the need for an active industrial policy to reconcile sustainability and economic development.[19] Investments in renewable energy, battery technology and circular systems are seen, not least in the Nordic economies, as measures that boost productivity rather than as costs associated with climate policy.

At the same time, the implementation of the green transition is shaped by who has influence over decisions and the interests and experiences that are considered when assessing various options.[20] In this context, the importance of gender equality for competitiveness can be understood through two questions:

1. **How does participation in decision-making influence the priorities that are set?**
2. **How is our understanding of innovation shaped, and what kinds of solutions are given space?**

18. OECD, *Job Creation and Local Economic Development 2023: Bridging the Great Green Divide* (OECD, 2023), https://doi.org/10.1787/21db61c1-en; Murauskaite-Bull et al., *The Future of Jobs Is Green*, EUR 30867 EN (Publications Office of the European Union, 2021).
19. Anneleen Vandeplas et al., *The Possible Implications of the Green Transition for the EU Labour Market*, Discussion Paper 176 (Publications Office of the European Union, 2022); Draghi, *The Future of European Competitiveness: A Competitiveness Strategy for Europe (Part A)*.
20. See also Jimmy Sand, "Hur bidrar ojämställdhet till klimatförändringar och hur kan klimatomställningen främjas av jämställdhet?" [How does inequality contribute to climate change, and how can gender equality help to promote the climate transition?], SOU 2026:41, *Jämställdhet i en föränderlig tid – nuläge och vägar framåt: Volym 2: Kunskapsunderlag*, betänkande av 2024 års jämställdhetsutredning (Statens offentliga utredningar, 2026).

Key messages of the section

- **The competitiveness of the green transition will be determined not only by the scale of investments but also the nature of decision-making.** When strategic priorities are set by groups with limited representation, there is a risk of important perspectives, skills and opportunities being overlooked.
- **Gender representation in leadership roles can contribute to better decision-making during the green transition.** Research suggests that organisations with more balanced representation are more likely to incorporate long-term and sustainability-related perspectives in their strategic decisions.
- **An overly narrow definition of innovation risks limiting the potential of the green transition.** A focus on technical innovation and patents tends to obscure social, organisational and service-based innovations, which are also crucial to the green transition.

Participation in decision-making

Research shows that the composition of management teams and boards of directors influences how companies prioritise issues relating to the green transition. Studies of Nordic companies suggest that firms with a female CEO perform better on combined measures of social and environmental impact. However, there are no corresponding effects under a female chair, which suggests that the impact of gender representation is primarily seen within operational management – where decisions on investments and strategic direction are taken.[21]

Similar patterns can be found in broader European analyses, which suggest a threshold at which gender representation becomes significant: when the proportion of female board members falls below roughly a quarter, sustainability outcomes are weaker, whereas improvements occur as representation increases to about 30 per cent. Above this level, the effects are less clear. The results thus suggest that it is not the presence of individual women that is decisive but rather a more fundamental change in gender composition.[22]

One possible interpretation is that more balanced gender representation helps to broaden the perspectives on which decisions are based. Studies of groups show that, on average, women in leadership positions tend to place greater emphasis on social and long-term goals, are less inclined to take high risks and are more likely to

21. Habeeb Yahya, "Female Leadership and ESG Performance of Firms: Nordic Evidence," *Corporate Governance: The International Journal of Business in Society* 25, no. 1 (2025): 109–27.
22. Mohammad Hassan Shakil et al., "Board Gender Diversity and Emissions Performance: Insights from Panel Regressions, Machine Learning, and Explainable AI," *Journal of Environmental Management* 401 (March 2026): 128776; see also Ishwar Khatri, "Board Gender Diversity and Sustainability Performance: Nordic Evidence," *Corporate Social Responsibility and Environmental Management* 30, no. 3 (2023): 1495–507.

prioritise climate-related issues. These are statistical trends, not a reflection of how individual women or men behave. However, such patterns can have a significant impact on how organisations make important decisions. [23]

At the same time, research shows that representation in itself is not enough. In contexts in which women are formally included but lack real influence – for example, in organisations with strongly hierarchical structures – there is no impact on either strategy or results. The experience of legislation on gender quotas for company boards in Norway illustrates this: while the reform has increased the proportion of women on boards, it has not had any clear spillover effects on other parts of companies or influenced women's career opportunities more broadly. However, the body of research has not been able to demonstrate any negative consequences of the legislation for corporate productivity – something early, now-discredited studies had suggested.[24]



23. Camilla Jensen, "Does Gender Matter for Green Behaviour? An Empirical Investigation with Cross-Country Data from the Enterprise Surveys," *Sage Open* 15, no. 2 (2025): 21582440251336837; see also Madeleine Eriksson et al., "The Heroes and Killjoys of Green Megaprojects: A Feminist Critique," *Cambridge Journal of Regions, Economy and Society* 18, no. 2 (2025): 341–57..
24. B. Espen Eckbo et al., "Valuation Effects of Norway's Board Gender-Quota Law Revisited," *Management Science* 68, no. 6 (2022): 4112–34; Mari Teigen, "Gender Quotas for Corporate Boards: A Qualified Success in Changing Male Dominance in the Boardroom," in *Successful Public Policy in the Nordic Countries*, 1st ed., ed. Caroline De La Porte et al. (Oxford University Press, 2022).

Overall, the research suggests that participation in decision-making is a key factor in how the green transition is implemented. When key investments and priorities are determined in contexts in which certain experiences and perspectives are under-represented, there is a risk that the basis for decision-making will be limited.[25] More balanced representation between women and men, offering genuine influence over decisions, can contribute to more well-informed decisions and thus to a more effective transition – which, in the long run, will also have benefits for competitiveness.

Gender representation and green growth

Perhaps the most direct argument for the link between gender representation and green competitiveness comes from macroeconomic research. A study published in 2020, analysing 140 countries between 1995 and 2014, shows that gender equality can, in some cases, help to decouple economic growth from carbon dioxide emissions – that is, countries with higher levels of gender equality can continue to increase their GDP whilst experiencing lower associated increases in emissions. The effect is greatest in high-income countries, including the Nordic countries. In countries that have already reached a high level of GDP, increased gender equality has a statistically significant effect in terms of emissions reductions.



Further reading

Gender Inequality, Reproductive Justice, and Decoupling Economic Growth and Emissions: A Panel Analysis of the Moderating Association of Gender Equality on the Relationship between Economic Growth and CO^2 Emissions

Understanding innovation

A key issue of competitiveness is how innovation is defined and prioritised with regard to the green transition. Sectors now considered to be of the greatest strategic importance in the transition are among the most gender-segregated in the labour market, with women being significantly under-represented.[26] When

25. Nina Lander Svendsen et al., *How Climate Policies Impact Gender and Vice Versa in the Nordic Countries*, TemaNord 2022:507 (Nordiska ministerrådet, 2022).
26. Ulrika Jansson & Jimmy Sand, *Jämställd samhällsomvandling? Genusperspektiv på hållbart arbetsliv i Norrbotten, Västerbotten, Västernorrland och Jämtland* [Gender-equal social transformation? A gender perspective on sustainable working life in Norrbotten, Västerbotten, Västernorrland and Jämtland] (Nationella sekretariatet för genusforskning, 2026); Jansson & Sand, *Genusperspektiv på framtidens högteknologiska arbetsliv* [A gender perspective on the high-technology working life of the future].

investment and influence are concentrated in sectors in which there is strong male dominance, there is a risk that important skills and perspectives are lost and that priorities will only reflect the experiences and perspectives of a narrow cross-section of the population. This can limit innovation capacity and thereby weaken long-term competitiveness with regard to the green transition.

The prevailing understanding of innovation in policy and research is technology oriented and patent centred in a way that systematically overlooks social, organisational and service innovation – forms of innovation that are essential for realising the green transition, and which are more common in industries and sectors with higher levels of female representation.[27] When the European Institute for Gender Equality (EIGE) and other institutions assess how gender equality affects innovation and economic growth, it is largely on the basis of STEM-related indicators of representation: if women participated in STEM education and professions to the same extent as men, it is estimated that EU GDP per capita could be increased by approximately 0.7–0.9 per cent by 2030 and by 2.2–3.0 per cent by 2050 (equivalent to approximately 610–820 billion euros) as a result of higher productivity, job increases and a larger effective labour supply.[28] These calculations highlight a significant aspect of the economic potential of gender equality. Furthermore, there is reason to believe that the overall effects could be even greater, given that other forms of innovation – such as social, organisational and service-based innovations – are more difficult to measure and therefore not always captured in analyses. A broader perspective on innovation can thus further clarify how gender equality contributes to long-term development, resilience and competitiveness.[29]

Research into initiatives that support women's entrepreneurship points to a recurring pattern in how problems and solutions are framed. Measures to promote entrepreneurship among women often focus on the individual level, for example through mentoring, networking or skills development. Meanwhile, institutional factors such as access to capital, regulatory frameworks, market structures and welfare systems receive less attention. Research thus suggests that, in practice, the causes of unequal outcomes are attributed to the individual rather than the institutional contexts that shape business conditions and market behaviour.[30]

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27. Naomi-Rose Alexander et al., *Green Jobs and the Future of Work for Women and Men*, IMF Staff Discussion Note No. SDN/2024/003 (International Monetary Fund ;IMF, 2024), 1; Attilio Di Batista et al., *Jobs of Tomorrow: Social and Green Jobs for Building Inclusive and Sustainable Economies* (World Economic Forum, 2023); Patrick Joyce, *Den gröna omställningen i norra Norrland: Tjänstesektorns roll* [The green transition in northern Norrland: The role of the service sector] (Almega, 2023); Michela Mari et al., "Women Entrepreneurs and Innovation: Retrospect and Prospect," *Journal of Innovation & Knowledge* 9, no. 3 (2024): 100519.
28. EIGE, *Economic Benefits of Gender Equality in the EU: How Gender Equality in STEM Education Leads to Economic Growth* (European Institute for Gender Equality; EIGE, 2017).
29. Malin Lindberg, *Samverkansnätverk för innovation: En interaktiv och genusvetenskaplig utmaning av innovationspolitik och innovationsforskning* [Collaborative Networks for Innovation: An interactive and gender studies-based challenge to innovation policy and innovation research] (Luleå tekniska universitet, 2010); Rambøll Management Consulting, *Kartläggning Av Det Företagsfrämjande Systemet i Sverige* [A Survey of the Business Support System in Sweden]; Jeaneth Johansson, *Under ytan: Hur går snacket och vem får pengarna II?* [Under the Surface: What's the talk and who gets the money II?], Info 0587 (Tillväxtverket, 2015); Swedish Gender Equality Agency, *Regionala företagsstöd och kvinnors Företagande* [Regional business support and women's entrepreneurship], Underlagsrapport 2024:4 (Jämställdhetsmyndigheten, 2024).
30. Lene Foss et al., "Women's Entrepreneurship Policy Research: A 30-Year Review of the Evidence," *Small Business Economics* 53, no. 2 (2019): 409–29.



The importance of care work and welfare solutions

The Nordic welfare model can be understood as an institutional system in which social security and economic efficiency need not be in conflict but can in fact be mutually reinforcing.[31] Institutions such as childcare, parental insurance and the tax system help to increase labour force participation, particularly amongst women, and shape the way in which work and responsibilities are distributed within society. These factors, in turn, influence how human capital is developed, matched and utilised, which is crucial for productivity and long-term competitiveness.[32]

The nature of the labour supply and the way in which talent is utilised are also influenced by the norms, incentives and behaviours within households and organisations. In this context, the importance of gender equality for competitiveness can be understood through two questions:

1. **What role does care work play in the functioning and long-term development of the economy?**
2. **How are labour supply and the allocation of talent affected by the distribution of paid and unpaid work?**

31. Kristin Alsos & Jon Erik Dølvik, *The Future of Work in the Nordic Countries: Opportunities and Challenges for the Nordic Working Life Models* (Nordic Council of Ministers, 2021).
32. Hsieh et al., "The Allocation of Talent and U.S. Economic Growth"; Claudia Olivetti & Barbara Petrongolo, "The Economic Consequences of Family Policies: Lessons from a Century of Legislation in High-Income Countries," *Journal of Economic Perspectives* 31, no. 1 (2017): 205–30.

Key messages of the section

- **Care and welfare are a productive investment in society, not just a public expenditure.** Childcare, eldercare and other welfare services contribute to a social infrastructure that enables people to participate in working life and develop their skills.
- **The distribution of care work affects the labour supply throughout the human life cycle.** The fact that women, to a greater extent than men, adapt their working hours, career choices and labour market participation according to their care responsibilities means that talent and skills are not always deployed where they provide the greatest value.
- **The supply of skilled labour in the welfare sector is in itself a matter of competitiveness.** Demographic changes are increasing the demand for labour in health and social care, making a broader recruitment base and reduced gender segregation strategically important for the sustainability of welfare systems.

Reproductive labour as social infrastructure

The importance of welfare and social care relates not only to how labour force participation is distributed between women and men but also to how the societal functions that enable participation in working life are organised. This is a key issue for competitiveness, as the size, health and productivity of the labour force depend on these functions operating effectively over time. Social reproduction – that is, the work and institutions that maintain and regenerate people's capacity to live and work – thus constitutes a fundamental prerequisite for all economic activity.[33] This includes both unpaid work carried out in households and paid care work carried out within the healthcare, education and social care sectors, which together shape the long-term conditions for production within the economy.[34]

Despite this central role, social reproduction is often treated as a peripheral or private matter within economic analysis and policy.[35] It is an activity that, due to social norms, is regarded as feminine, and it is women who carry out the bulk of both unpaid and paid work in this area. A large proportion of this work falls outside

33. Antonella Picchio, *Social Reproduction: The Political Economy of the Labour Market* (Cambridge University Press, 1992); Nancy Folbre, *The Invisible Heart: Economics and Family Values* (The New Press, 2001); Nancy Fraser, "Contradictions of Capital and Care," *New Left Review* 100 (August 2016); Nancy Folbre, *Developing Care: Recent Research on the Care Economy and Economic Development* (International Development Research Centre, 2018).
34. Mary Daly & Jane Lewis, "The Concept of Social Care and the Analysis of Contemporary Welfare States," *The British Journal of Sociology* 51, no. 2 (2000): 281–98; Diane Elson, "Recognize, Reduce, and Redistribute Unpaid Care Work: How to Close the Gender Gap," *New Labor Forum* 26, no. 2 (2017): 52–61.
35. Marilyn Waring, *If Women Counted: A New Feminist Introduction* (HarperCollins, 1988); Nancy Folbre & Julie A. Nelson, "For Love or Money – or Both?," *Journal of Economic Perspectives* 14, no. 4 (2000): 123–40.

of national economic metrics and therefore tends to be undervalued in terms of resource allocation as well as investment decisions.[36] In practice, this means that the economy systematically underinvests in the type of 'social infrastructure' that is essential to the production, maintenance and development of the labour force over time.

The consequences of this underinvestment become clear from a macroeconomic perspective. International analyses show that shortcomings in care systems and the unequal distribution of care responsibilities limit the labour supply and hamper productivity growth.[37] Globally, hundreds of millions of people – primarily women – are excluded from the labour force due to care responsibilities, which illustrates how economic capacity remains untapped when social infrastructure is inadequate.[38] At the same time, economic models show that public investment in welfare services such as childcare and eldercare boosts competitiveness. When fewer people are held back by extensive care responsibilities, the labour market can make better use of available expertise, which increases employment, improves the supply of skills and contributes to higher productivity.[39]

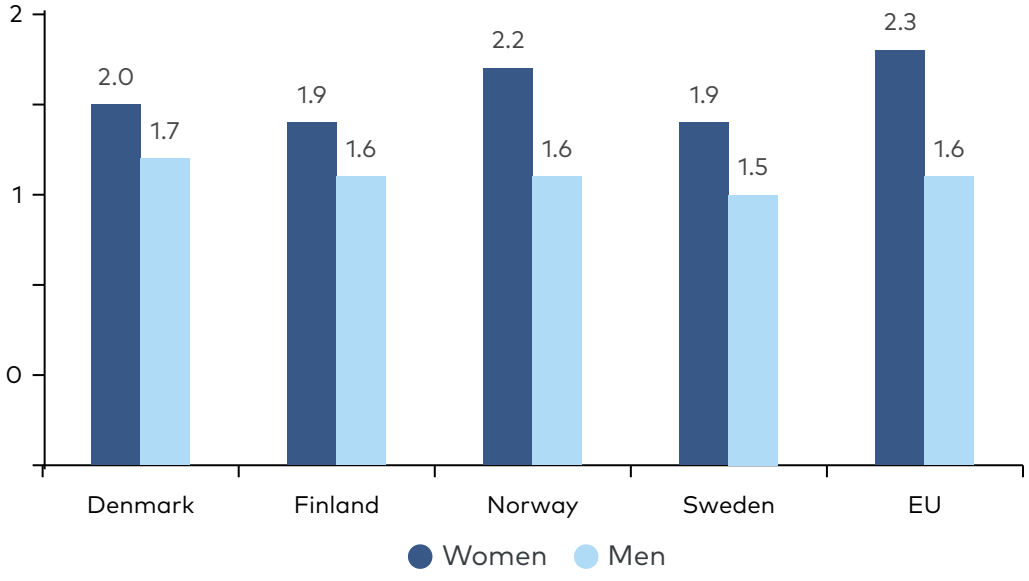


Figure 2. Unpaid domestic and care work performed by women and men, number of hours per day (decimals indicate tenths of an hour), in the Nordic countries and the EU. Eurostat, 2024.

36. Joseph E. Stiglitz et al., *Report by the Commission on the Measurement of Economic Performance and Social Progress*, 2009; Mike Seiferling, "What We Value and Why It Matters: A Historical Overview of GDP, the Production Boundary and Unpaid Household Labour," *New Political Economy*, December 10, 2025, 1–19.
37. International Labour Office et al., *Care Work and Care Jobs for the Future of Decent Work*, with International Labour Organization (International Labour Organization, 2018); Hyun-Jung Nam et al., "Gender Inequality, Institutional Quality and Economic Outcomes in the European Union," *European Financial Management* 31, no. 1 (2025): 463–92.
38. UN Women, ed., *Families in a Changing World*, Progress of the World's Women 2019/2020 (UN Women, 2019).
39. Aksel Isakova & Francesco Luna, *Gender Equality and Inclusive Growth*, IMF Working Papers 2021/059 (International Monetary Fund, 2021).

Viewing care as an investment rather than a cost therefore entails a shift in our perspective on the functioning of the economy. Experience from the Nordic countries shows that well-developed care systems can act as a key part of economic infrastructure – comparable to physical investment – by enabling a high and stable level of labour force participation. At the same time, the sustainable development of this social infrastructure requires that responsibility for care be redistributed, not only between the public sector and households but also between women and men. Without such a redistribution, the expansion of formal care systems risks being partially undermined by the persitence of certain norms and behaviours within households.[40]

Furthermore, developments in health and social care are giving rise to a growing need for labour in these sectors. The Nordic countries, like other high-income countries, are facing significant labour shortages in the welfare sector as a result of demographic changes and increasing demand for care services.[41] Against this background, increasing the participation of men in care professions becomes a strategic issue for the supply of skills, quality and the resilience of welfare systems. A broader recruitment base would enable both better alignment and more efficient utilisation of the labour force's collective skills.[42]



40. Claudia Goldin, "A Grand Gender Convergence: Its Last Chapter," *American Economic Review* 104, no. 4 (2014): 1091–119; Olivetti and Petrongolo, "The Economic Consequences of Family Policies."
41. OECD, *Who Cares? Attracting and Retaining Elderly Care Workers*, OECD Health Policy Studies (OECD Publishing, 2020), https://doi.org/10.1787/92c0ef68-en; Emanuele Pavolini et al., *Addressing Knowledge Gaps in Relation to the Long-Term Care Workforce: Policy Brief* (Publications Office of the European Union, 2025).
42. Debora Pricila Birgier et al., *Share the Care: Strategies to Increase Diversity in Nursing Education* (Nordregio, 2024).

In summary, underdevelopment within social reproduction results in an economy that does not fully invest in the processes that facilitate its own reproduction and growth. A more strategic view of care – as an integrated component of socio-economic infrastructure – and a more equitable distribution of care responsibilities between women and men are therefore key prerequisites to long-term productivity, inclusion and economic resilience.[43]

Labour supply and talent allocation

Economic output is a function of capital, labour and knowledge – whereby a broader and more efficient utilisation of the labour force increases both short-term output and long-term innovation capacity.[44] Against this background, there is strong evidence for the influence of gender equality and welfare institutions on economic development.[45] The Nordic economies are characterised by high levels of labour force participation, including amongst women, which is often highlighted as a strength of these economic models. However, these high participation levels mask several structural differences between women, men and other groups that have a direct impact on how efficiently the labour force is utilised and how well talent is harnessed.[46]

There is a consistent pattern in that women and men participate in the economy on different terms. Women are significantly more likely to work part-time, experience higher rates of sick leave and are over-represented in certain sectors (such as care and welfare), whilst men are over-represented in others (such as technical industries), and there is widespread occupational segregation within the labour market. This means that the labour force differs not only in size but also in distribution across occupations and positions. The result is that skills are not always applied to the most productive areas and risk being constrained by gender-related norms.[47]

43. Laeticia Thissen et al., eds., *The European Care Strategy: A Chance to Ensure Inclusive Care for All?*, Policy Study (FEPS, Foundation for European Progressive Studies, 2023).
44. Philippe Aghion & Peter Howitt, "A Model of Growth Through Creative Destruction," *Econometrica* 60, no. 2 (1992): 323–51; Gene M. Grossman & Elhanan Helpman, *Innovation and Growth in the Global Economy* (MIT Press, 1993).
45. EIGE, *Economic Benefits of Gender Equality in the EU*; Hyun-Jung Nam et al., "Gender Inequality, Institutional Quality and Economic Outcomes in the European Union," *European Financial Management* 31, no. 1 (2025): 463–92.
46. Claudia Olivetti & Barbara Petrongolo, "Unequal Pay or Unequal Employment? A Cross-Country Analysis of Gender Gaps," *Journal of Labor Economics* 26, no. 4 (2008): 621–54; Olivetti and Petrongolo, "The Evolution of Gender Gaps in Industrialized Countries."
47. Karin Halldén & Anders Stenberg, Fritt valt arbete? en ESO-rapport om könssegregering i utbildning och yrke (Regeringskansliet, 2023); OECD, The Pursuit of Gender Equality: An Uphill Battle (OECD, 2017).

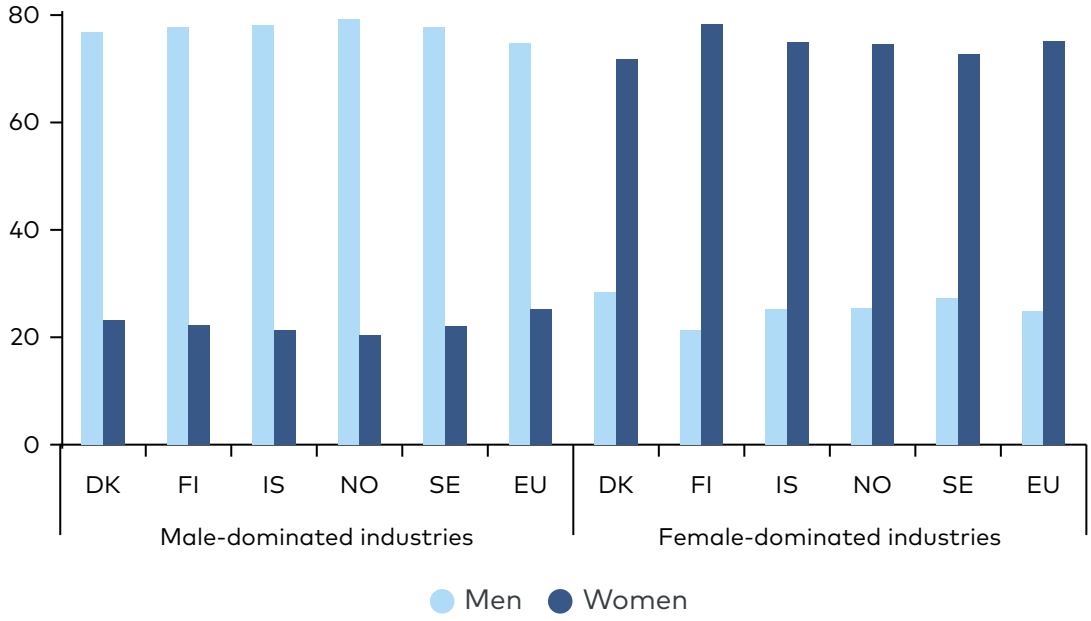


Figure 3. Share of women and men (in percent) in various sectors in the Nordic countries and the EU. Nordic Statistics, 2024.

One particularly important factor relates to changes in working hours over the human life cycle. Research shows that motherhood has a clear and long-lasting effect on women's career progression and earnings, whilst the corresponding effects of parenthood are considerably weaker for men.[48] These differences are closely linked to how responsibility for unpaid care work is shared within households. Despite far-reaching reforms, women still take the majority share of parental leave and are more likely to adapt their working hours to the demands of their family situation.[49]

These patterns cannot be understood solely as individual choices. They are shaped by the interplay between economic incentives, institutional structures and social norms.[50] Tax rules, transfer payment systems and access to childcare affect the range of economically rational choices for households, particularly when starting a family. Taxation or benefits systems based on combined household income can create weak marginal incentives for the adult in the household with the lower

48. Henrik Kleven et al., "Children and Gender Inequality: Evidence from Denmark," *American Economic Journal: Applied Economics* 11, no. 4 (2019): 181–209; Simon Bensnes et al., "Reconciling Estimates of the Long-Term Earnings Effect of Fertility," *SSRN Electronic Journal*, ahead of print, 2023; Valentina Melentyeva and Lukas Riedel, *Child Penalty Estimation and Mothers' Age at First Birth*, ECONtribute Discussion Papers Series 266 (University of Bonn and University of Cologne, Germany, 2023).
49. Nikolay Angelov et al., "Parenthood and the Gender Gap in Pay," *Journal of Labor Economics* 34, no. 3 (2016): 545–79; Henrik Kleven et al., "Child Penalties across Countries: Evidence and Explanations," *AEA Papers and Proceedings* 109 (May 2019): 122–26.
50. Bertrand Marianne, "New Perspectives on Gender," in *Handbook of Labor Economics*, vol. 4 (Elsevier, 2011); Olivetti and Petrongolo, "The Economic Consequences of Family Policies."

income, which in heterosexual couples is often, in practice, the woman. Empirical studies show, for example, that means-tested transfers and housing benefits can contribute to supressing working hours amongst women, given that additional work yields limited financial returns.[51] At the same time, reforms such as individual taxation and the expansion of childcare have been shown to have had a significant impact on women's labour force participation in the Nordic countries.[52]

How these financial incentives are implemented in practice is also shaped by social norms surrounding support and care. Research shows that households often adapt their internal division of labour in ways that reinforce established gender norms, even when it conflicts with financial signals. For example, studies of tax reforms in Sweden show that when women's incomes exceed those of men, some households compensate through women reducing their working hours or taking on greater responsibility for unpaid work.[53] The findings suggest that economic policy instruments alone have limited capacity to change the division of labour within the home, and that incentives, institutions and norms interact in ways that influence both labour supply and skills allocation over time.

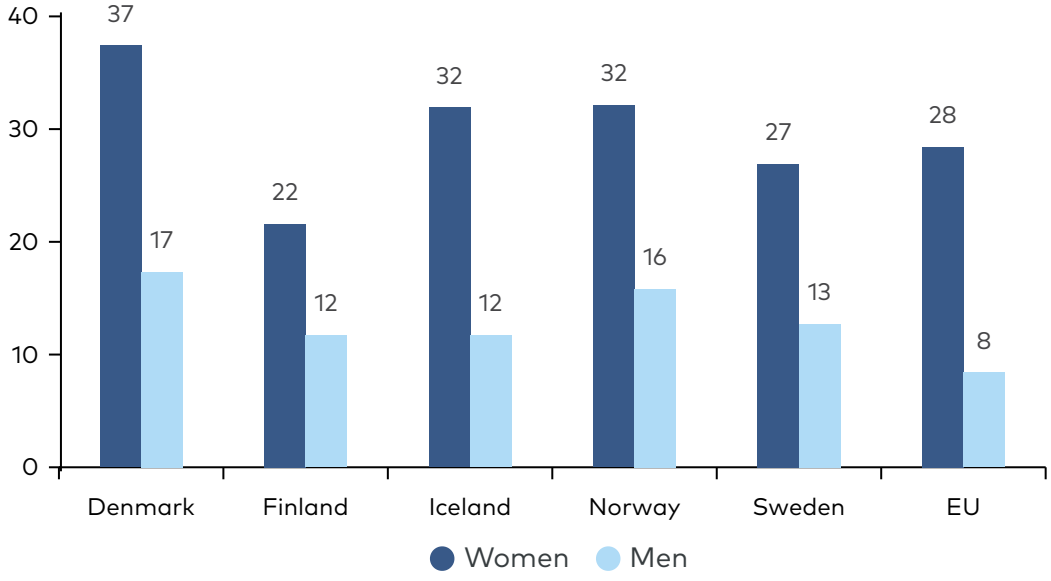


Figure 4. Share of women and men working part-time (in percent), in the Nordic countries and the EU. Nordic Statistics, 2024.

51. Spencer Bastani et al., "The Anatomy of the Extensive Margin Labor Supply Response*," *The Scandinavian Journal of Economics* 123, no. 1 (2021): 33–59.
52. Håkan Selin, "The Rise in Female Employment and the Role of Tax Incentives. An Empirical Analysis of the Swedish Individual Tax Reform of 1971," *International Tax and Public Finance* 21, no. 5 (2014): 894–922.
53. Alexander M. Gelber, "Taxation and the Earnings of Husbands and Wives: Evidence from Sweden," *The Review of Economics and Statistics* 96, no. 2 (2014): 287–305; Andrea Ichino et al., "Taxes, Childcare, and Gender Identity Norms," *Journal of Labor Economics* 44, no. 2 (2026): 553–86.

The technological transition also has an impact from a life-cycle perspective on labour supply and the use of skills. As working lives are extending in many high-income countries, it is becoming increasingly important for the labour market to facilitate continuous adaptation and skills development, even in the latter stages of working life. Research shows that technological changes can exacerbate existing inequalities in this regard, with groups in a weaker position in the labour market – such as older women – being at greater risk of marginalisation or having their opportunities limited.[54] The consequences of this are not only individual. When sections of the labour force are denied opportunities to continue contributing as the economy changes, productive capacity is lost. In the context of aging demographics, this poses a direct challenge to competitiveness, as the effective labour supply declines whilst the need for skills increases.[55] The digital transition therefore highlights the importance of institutions that support adaptation throughout working life, rather than focusing solely on entry into the labour market.

All in all, this means that labour supply is not just a question of how many people are in work, but of how labour is distributed and utilised. When sections of the labour force – certain groups of women and men, with varying levels of education and, in some cases, migrant backgrounds[56] – face systematically weakened links to the labour market or limited opportunities to attain more productive positions, productive potential is lost. A more even distribution of work and responsibilities, alongside institutions that increase the opportunities of individuals to participate fully in working life, could therefore contribute to a more efficient allocation of talent and, consequently, greater competitiveness. Welfare systems in the Nordic countries have historically worked towards this end, but there is still room for improvement in terms of gender equality in the areas that contribute to competitiveness.[57]

54. Sabanova, *Changing Working Lives: Women and Automation in the Labour Market*.
55. OECD, *Is the Last Mile the Longest? Economic Gains from Gender Equality in Nordic Countries* (OECD, 2018).
56. See for example Henning Finseraas & Andreas Kotsadam, "Ancestry Culture and Female Employment—An Analysis Using Second-Generation Siblings," *European Sociological Review* 33, no. 3 (2017): 382–92; Christian Dustmann et al., "Refugee Benefit Cuts," *American Economic Journal: Economic Policy* 16, no. 2 (2024): 406–41; Arizo Karimi et al., "Origin, Norms, and the Motherhood Penalty," preprint, SSRN, 2024; Cristina Bratu et al., "Individualized Benefits and Access to Active Labor Market Programs Boost Refugee Women's Economic Integration," *The Review of Economics and Statistics*, January 28, 2025, 1–35.
57. OECD, *Is the Last Mile the Longest?*; Nordic Council of Ministers, *The Nordic Gender Effect at Work: Nordic Experiences on Parental Leave, Childcare, Flexible Work Arrangements, Leadership and Equal Opportunities at Work* (Nordic Council of Ministers, 2019).

Conclusion

When it comes to efforts to strengthen competitiveness in the Nordic region, gender equality is not a side issue but an integral component of the mechanisms that determine the efficiency of interactions between human capital, innovation and institutions over time.



Across all the types of transformation analysed – digitalisation, the green transition and social sustainability – similar patterns emerge: when resources, skills and decision-making scope are not allocated effectively, there is a risk of lost potential, with consequences for productivity, adaptability and long-term economic resilience.

Measures to boost competitiveness need to be designed with a clear structural perspective, in which gender equality is integrated into the analysis of how labour markets function, how innovation is defined and prioritised, and how welfare institutions facilitate participation in working life. Strengthening the competitiveness of the Nordic region is not just a matter of introducing more capital or new technology but of making better use of the collective expertise and resources that already exist in society. Research shows that many unequal outcomes are shaped by institutions, incentives and normative systems, which means that initiatives aimed solely at individuals often have limited scope. To fully harness the population's skills and capacity for innovation, gender equality must be understood as an integral dimension of society's competitiveness.

At the same time, experience from Nordic gender equality work shows that change rarely comes about through individual initiatives. Studies and guidance from several Nordic countries highlight the importance of clear commitments from leadership, systematic monitoring and broad organisational involvement if gender equality objectives are to have an impact on organisations' day-to-day processes.[58]

58. See for example Digitaliserings- og Ligestillingsministeriet et al., *Kønsbalance i ledelse: Fællesoffentligt inspirationskatalog til at fremme en ligelig kønssammensætning blandt øverste ledelsesniveauer* [Gender balance in management: A joint public sector catalogue of ideas to promote gender parity at senior management levels] (Digitaliserings- og Ligestillingsministeriet, 2023); Kultur- og likestillingsdepartementet, *Strategi for likestilling mellom kvinner og menn 2025–2030* [Strategy for equality between women and men 2025-2030] (Kultur- og likestillingsdepartementet, 2024); Jämställdhetsmyndigheten, "Vägledning för jämställdhetsintegrering" [Guidance on gender mainstreaming], last updated 25 June, 2026, Jämställdhetsmyndigheten.

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About this publication

How can Nordic competitiveness benefit from gender equality?

Jimmy Sand för NIKK, Nordic Information on Gender

TemaNord 2026:527

ISBN 978-92-893-8515-2 (PDF)
ISBN 978-92-893-8516-9 (ONLINE)
http://dx.doi.org/10.6027/temanord2026-527

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Published: September 2026

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