

# BRIDGING THE GREEN JOBS DIVIDE

 Nordic Council  
of Ministers

Nordic gender barriers  
and opportunities in  
the spotlight



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Addressing environmental change in a way that advances social justice and promotes decent work creation is central to the ILO's Just Transition Guidelines (2015) and the ILO Resolution concerning a just transition towards environmentally sustainable economies and societies for all (2023). This think piece highlights gender perspectives in the green transition and in green jobs in the Nordic region. Strengthening gender perspectives in the green shift is a crucial step in the Nordic Council of Ministers' vision of becoming the most sustainable and integrated region in the world in 2030.



**International  
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# INTRODUCTION

According to the Nordic vision for 2030 (Nordic Council of Ministers, 2022),<sup>[1]</sup> the region in its diversity – comprising Denmark, Finland, Iceland, Norway, Sweden, the Faroe Islands, Greenland, and Åland – aims to be the most sustainable and integrated region in the world. To achieve this, it will need to be (at least) three things: green, competitive, and socially sustainable. This means changing not only how we live, produce, and consume, but also how we work and what we learn (Høst, J. et al., 2020).<sup>[2]</sup>

Although there are still many unknowns, and countries, communities, sectors, and individuals are learning as they go, the green transition is likely to increase employment opportunities. Estimates signal that green jobs are in demand in all countries in the Nordic Region. At the same time, given the varying definitions, views, and approaches to green jobs – and the spectrum of green jobs – strengthening the knowledge and looking closer at definitions is key, as Nordic countries are striving to restructure labour markets towards becoming green, greener, and the greenest.

Ensuring environmentally sustainable economies and societies requires a transition that is more than green: it must also be a just transition for women and men in all their diversity. There is increasing scientific consensus on the gendered effects of climate change globally and how climate change exacerbates pre-existing gender inequalities at work (ILO, 2022).<sup>[3]</sup> In the Nordic Region, however, the links between gender and climate policy responses have not been well-documented nor shared with the relevant stakeholders (Lander Svendsen, N., et al., 2022).<sup>[4]</sup> At the same time, gender equality is key to a successful green shift. Without sufficient gender analysis and action that addresses not only structural barriers such as occupational gender segregation but also cultural barriers, many will not be able to play their rightful roles in this important labour market shift (Rustad, L.M., 2021).<sup>[5]</sup>

This think piece a collaboration between the Nordic Council of Ministers and the International Labour Organization (ILO) aims to stir up reflection, while calling for a systematic and continual building of the knowledge base green jobs and gendered implications. Divided into five sections, it looks to explore what green jobs actually

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1. Nordic Council of Ministers, 2022. [Our Vision 2030](#).
  2. Høst, J., Lauritzen, F., and Popp, S., 2020. [A socially sustainable green transition in the Nordic Region: An analysis of the inequality-creating effects of the green transition and the opportunities to promote a socially sustainable green transition](#). Nordic Council of Ministers.
  3. ILO, 2022. [Just Transition Policy Brief: Gender equality, labour and a just transition for all](#).
  4. Lander Svendsen, N., Weber, K., Factor, G., Engelsbak, L.W., and Fischer-Bogason, R., 2022. [How climate policies impact gender and vice versa in the Nordic countries](#). Nordic Council of Ministers.
  5. Rustad, L.M., 2021 (21 October). [Gender equality is essential for the green shift](#). Kilden.



are in the Nordic context, and, using the latest comparative figures available, gives an overview of who could be 'winning' and 'losing' in the green jobs race. Building on existing evidence and research from the Nordic Region and beyond, it discusses some of the gender barriers to green jobs and looks at the green and sustainable skills needed today, tomorrow, and the day after. As green jobs are only part of the solution, the think piece also promotes changing gendered behaviours, norms, and habits as essential for success. In addition to case studies from a range of countries, this piece consolidates some suggestions and lessons learned from the Nordic countries and other parts of the world for the road ahead.

## Headline messages

1. A variety of approaches to define and measure green jobs exist, also across the Nordic Region, with countries, policymakers, practitioners, researchers, and organisations using different classifications. Few analyses have been able to give estimates disaggregated not only by sex but also by geographical location.
2. Green jobs are seen as a key solution for meeting environmental goals, with new jobs being created and many more being transformed. Green jobs, however, have to do more than just fulfil climate goals: they must also be socially sustainable and decent jobs.
3. The latest figures from the Organisation for Economic Co-operation and Development (OECD) show that almost 25 per cent of Nordic workers are in what is today considered a green job, which is higher than the OECD average.
4. Only slightly more than 30 per cent of all Nordic workers in green jobs are women, however, as these jobs are most often in historically male-dominated sectors.
5. As the green transition gathers momentum, men will most likely be the most affected by the disappearance or transformation of polluting jobs, which are held by an average of 11.7 per cent of workers in the Nordic Region.
6. There are several barriers to women's equal participation in the green economy, such as occupational gender segregation, which may be perpetuated or widened with the expansion of a greener labour market. Cultural and societal norms, a lack of gender-sensitive and transformative policies, training, and mentorship opportunities, and inequity in asset ownership are also key hindrances.
7. Girls and women should be enticed to enter science, technology, engineering, and mathematics (STEM) fields. At the same time, men and boys should be encouraged to enter care and education sectors.
8. Opportunities for lifelong learning, upskilling, and reskilling of the workforce is a 'no-brainer' and should be made available to all workers, equally, centrally, and sub-nationally. Social dialogue can play a powerful role in support of this.
9. To identify and nurture the needed female and male green talent, school offers an important entry-point from the earliest age, while later years also offer opportunities to ensure greater equality in study and occupational choices.
10. Green jobs are only part of the solution. More focus should be placed on changing gendered habits, norms, and behaviours and the importance of other sustainable sectors, such as care and education.



Photos: Getty Images, Adrian Infernus/Unsplash

# GREEN JOBS: WHAT THEY ARE, WHAT THEY DO (NOT)

## THE AMBITION: A GREEN NORDIC REGION

*"Together, we will promote a green transition of our societies and work towards carbon neutrality and a sustainable, circular, and bio-based economy."*

**This means that we will:**

Increase knowledge about and promote the transition to a more circular economy and non-toxic cycles. This involves efforts to promote the demand for and supply of solutions for the circular economy. (Objective 3)

Source: [Nordic Council of Ministers, 2021](#).

Nature and work are intrinsically connected. This means that the green transition already has – and will continue to have – enormous implications on the way we work, what we learn, and how we live our lives.

The Nordic Region is feeling these changes as countries are hard at work and scaling up energy-efficient and climate-friendly production (Nordic Council of Ministers, 2021).<sup>[6]</sup> Labour markets in the region are being restructured (Young Håkansson, S., et al., 2022),<sup>[7]</sup> and countries are seeing increasing demand for green jobs (OECD, 2023).<sup>[8]</sup>

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- 6. Nordic Council of Ministers, 2021 (2 June). [Time to boost Nordic knowledge to bridge gaps in the labour market](#).
  - 7. Young Håkansson, S., Jansson, U., Sand, J., and Simonsson, A., 2022. [Towards a sustainable future world of work in the Nordic countries](#). Nordic Information on Gender.
  - 8. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide](#).

Green jobs can offer some, perhaps even many, solutions to help countries meet their net-zero targets (Turns, A., 2020).<sup>[9]</sup> Around the world, more and more countries, regions, businesses, employers, trade unions, and workers themselves are showing a growing interest in high-quality employment that also helps support the environment (ILO, UNEP, and IUCN, 2022).<sup>[10]</sup>

This is indeed promising, but only if these jobs are also occupationally, educationally, and practically within equal reach of all women and men in their diversity.

The ILO's recent resolution on environmentally sustainable economies and societies for all (ILO, 2023)<sup>[11]</sup> highlights how the promotion of gender equality, social inclusion, and equity is imperative to successfully ensure a just transition. It calls for the formulation, implementation, monitoring, and evaluation of gender-responsive and inclusive frameworks – coordinated with economic, social, and environmental policies – by governments and social partners.

## What exactly is a green job?

The concept of a green job can be an elusive notion, with different countries, organisations, and researchers taking different approaches and using their own definitions (Janta, B., et al., 2023).<sup>[12]</sup> This makes quantifying and assessing their quality and then turning this into action on both the research and policy levels is a complicated task, both in the Nordic Region and beyond.

What most understand as green jobs, however, are those jobs associated with technology, engineering, and digitalisation that are meant to make society more climate-friendly by developing new solutions (Kilden, 2022).<sup>[13]</sup>

The two definitions that appear to be most used globally are from the International Labour Organization (ILO) and the UN Environment Programme (UNEP). Both take a top-down approach that looks at specific sectors and industries in which green jobs can and will be found, but they also stress that these jobs need to be 'good' or 'decent'.

According to the ILO, '*Green jobs are decent jobs that contribute to preserve or restore the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency*' (ILO, 2016).<sup>[14]</sup>

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9. Turns, A., 2020 (19 October). [What are green jobs – and why are they important?](#) The Guardian.

10. ILO, UNEP, and IUCN, 2022. [Decent Work in Nature-based Solutions 2022](#).

11. ILO, 2023. [Resolution concerning a just transition towards environmentally sustainable economies and societies for all](#). International Labour Conference, 111<sup>th</sup> Session.

12. Janta, B., Kritikos, E., and Clack, T., 2023. [The green transition in the labour market: how to ensure equal access to green skills across education and training systems: Analytical Report](#). European Union.

13. Kilden, 2022. [Gender equality and the green transition of the labour market: Policy brief](#).

14. ILO, 2016 (13 April). [What is a green job?](#)

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***Until autumn 2022, no commonly adopted approach existed to define and measure green(er) jobs and skills at international, EU or national levels, with various organisations and governmental agencies formulating and adopting their own definitions and approaches.***

Source: [Janta, B., Kritikos, E., and Clack, T., 2023.](#)

The UNEP defines green jobs as 'work in agriculture, industry, services and administration that contributes to preserving or restoring the quality of the environment'. According to the UNEP, these jobs must be 'good' jobs that meet the longstanding demands and decent work goals of the labour movement – including adequate wages, safe conditions, and workers' rights to organise and to participate in decision-making, without discrimination (UNEP, ILO, IOE, and ITUC, 2008).<sup>[15]</sup>

To build further on this, organisations such as the OECD have started taking a complementary bottom-up, skills- or task-based approach to measuring and quantifying green jobs which is 'sector-blind'. By looking at the proportion of 'green tasks' or 'green intensity' within a given occupation, a more granular way of estimating the share of green jobs is possible, acknowledging that they exist on a spectrum and across various occupational groups, and also that jobs can and often do consist of both green and non-green tasks (OECD, 2023).<sup>[16]</sup> The OECD study is also the first of its kind to estimate the share of green jobs at the local/sub-regional level within countries. The latest estimates from the Nordic countries are presented in the following chapter.

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15. UNEP, ILO, IOE, and ITUC, 2008. [Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World.](#)

16. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide.](#)

## QUANTIFYING GREEN JOBS

The OECD defines green jobs based on a given job's tasks.

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***Jobs are classified as green if at least 10% of tasks contribute to environmental objectives such as preserving the environment and reducing emissions.***

Source: [Zakrzewska, A., and Fitzgerald, L., 2023.](#)

## Assessing the implications of green, not green, and greenish work

Now that governments and social partners are stepping up their commitment to tackle climate change, the need to quantify and characterise the green economy – and green jobs – is becoming more important (Valero, A., et al., 2021).<sup>[17]</sup> This is essential in order for the Nordic countries to identify both opportunities and the hurdles they have to jump.

As the transition picks up speed, much remains unknown about the implications for the labour market of the green economic transition and environmental policies (Vandeplas, A., et al., 2022).<sup>[18]</sup> There is, however, strong evidence suggesting that three types of jobs are already, or will be, differently affected. **Green jobs** those that aim to reduce the impact of economic activity on the environment (such as waste recycling and R&D in green innovation) are expected to grow. These represent only a limited number of jobs in the overall labour market ecosystem, however, and, up until now, they have required a higher level of skills, resulting in higher wages (OECD, 2023).<sup>[19]</sup> **Brown jobs**, on the other hand, are highly polluting activities (within sectors such as mining or manufacturing, for instance). These may be less in demand or phased out. Brown jobs are also more likely to be fully transformed as these sectors try to go green. Most jobs in the labour market or the 'lion's share' however, are considered **white jobs**, with a neutral carbon footprint (Bluedorn J., et al., 2022).<sup>[20]</sup> These jobs are expected to see only moderate change related to the broader greening of labour market activities. Some may also see expanded labour

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17. Valero, A., Li, J., Muller, S., Riom C., Nguyen-Tien, V., and Draca, M., 2021. [Are 'green' jobs good jobs? How lessons from the experience to-date can inform labour market transitions of the future](#). London School of Economics and Political Science.
  18. Vandeplas, A., Vanyolos, I., Vigani, M., and Vogel, L., 2022. [The Possible Implications of the Green Transition for the EU Labour Market: Discussion Paper](#). European Commission.
  19. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide](#).
  20. Bluedorn, J., Hansen, N.-J., Noureldin, D., Shibata, I., and Tavares, M.M., 2022. [Transitioning to a Greener Labor Market: Cross-Country Evidence from Microdata](#). International Monetary Fund.



demand because of the green transition, even if they do not involve 'green tasks' directly (Vandeplas, A., et al., 2022).<sup>[21]</sup> Put simply, some industries or sectors will expand (green), and some may shrink, disappear, or be forced to change their ways of working (brown), while the vast majority of jobs will remain more or less the same (white).

## WHEN GREEN JOBS GO WRONG

Gender, ethnicity, and social class play key roles in where workers are in the world of work hierarchy. UK research on green jobs shows that recycling jobs were unattractive to many workers and were done by male labour migrants – in poor working conditions. So far, the risk of new green jobs becoming an arena for social dumping has not been a major topic in climate policy.

Source: [Wilson, J., and Chu, E., 2019.](#)

## Are green jobs necessarily 'good'?

All Nordic countries and self-governing territories agree: a green shift is needed to prevent a climate catastrophe (Lander Svendsen, N., et al., 2022).<sup>[22]</sup> Although the world we want – our future – depends on a transition to a carbon- and resource-efficient economy, we also have to acknowledge that, just as not all decent jobs today are green, not all green jobs are necessarily 'decent' or 'good'.

To reach our goals, efforts to minimise the consumption of resources and the path to net-zero emissions should both be conceptualised so that they are complementary with a socially sustainable green transition, and in particular with gender equality (Sand, J., 2023).<sup>[23]</sup> We now know, however, that green investments do not necessarily guarantee equal access to jobs and decent work opportunities for certain groups in society, such as women, young people, and those belonging to an ethnic minority, nor to the services and key resources that might help to effectively position them for job opportunities (UNDP, 2013).<sup>[24]</sup> Knowledge and recognition of complex and intersecting social inequalities, also on the basis of gender, are often missing, which leads to exclusionary effects in the world of work (Abram, S., et al., 2022).<sup>[25]</sup> The negative impacts of climate change on women's

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21. Vandeplas, A., Vanyolos, I., Vigani, M., and Vogel, L., 2022. [The Possible Implications of the Green Transition for the EU Labour Market: Discussion Paper](#). European Commission.
  22. Lander Svendsen, N., Weber, K., Factor, G., Engelsbak, L.W., and Fischer-Bogason, R., 2022. [How climate policies impact gender and vice versa in the Nordic countries](#). Nordic Council of Ministers.
  23. Sand, J., 2023. [Gender perspective on green jobs in the Nordic Region: A collection of results from NIKK 2020–2022](#). Nordic Council of Ministers.
  24. UNDP, 2013. [Green Jobs for Women and Youth: What Can Local Governments Do?](#)
  25. Abram, S., Atkins, E., Dietzel, A., Jenkins, K., Kiamba, L., Kirshner, J., Kreienkamp, J., Parkhill, K., Pegram, T., and Santos Ayllón, L.M., 2022. [Just Transition: A whole-systems approach to decarbonisation](#). Climate Policy.

work and employment means there is an urgent need for an intersectionality lens through which to look at how gender intersects with other characteristics, such as geographic area, indigenous identity, age, and migration, disability, and socio-economic status. Climate change has been described as a magnifying glass that exposes the gender inequalities in the access to and control of resources, and climate change may make these inequalities worse (BRIDGE, 2016).<sup>[26]</sup>

This also rings true in the Nordic Region, although gender equality is acknowledged as a prerequisite for the green transition (Kilden, 2022).<sup>[27]</sup> Yet, this transition is felt differently by different people, both across and within countries. To date, at the global level, there has been a short supply of systematic data on how environmental measures affect women and men in their diversity differently, and how gender equality may be hampered by these measures. This renders it a challenge to make informed policy decisions (OECD, 2021).<sup>[28]</sup> Research shows that the debate on how climate and gender equality actions interact has also been limited in Denmark, Norway, and Iceland (Lander Svendsen, N., et al., 2022),<sup>[29]</sup> and most climate policies have been lacking in the necessary gender equality insights and areas for action (Lander Svendsen, N., et al., 2022).<sup>[30]</sup>

At the same time, if we rise to the challenge, we have a golden opportunity today to both design and implement gender-equal solutions that will leave no one behind (Coles, K., et al., 2021).<sup>[31]</sup>

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26. BRIDGE, 2016 (7 March). [Four reasons why gender is an essential part of sustainable development.](#)

27. Kilden, 2022. [Gender equality and the green transition of the labour market: Policy brief.](#)

28. OECD, 2021. [Gender and the Environment: Building the Evidence Base and Advancing Policy Actions to Achieve the SDGs. POLICY HIGHLIGHTS.](#)

29. Lander Svendsen, N., Weber, K., Factor, G., Engelsbak, L.W., and Fischer-Bogason, R., 2022. [How climate policies impact gender and vice versa in the Nordic countries.](#) Nordic Council of Ministers.

30. Lander Svendsen, N., Weber, K., Factor, G., Engelsbak, L.W., and Fischer-Bogason, R., 2022. [How climate policies impact gender and vice versa in the Nordic countries.](#) Nordic Council of Ministers.

31. Coles, K., Thim, A., and Harris, S., 2021 (20 May). [Gender Equity in the Just Transition and the Shift to Green Jobs.](#) BSR.

## HOW NORDIC COUNTRIES APPROACH AND DEFINE GREEN JOBS

The Nordic Region's diversity extends to its definitions and views of and approaches to the green economy, green growth, and green jobs. Overall, there seems to be a trend towards taking an industry or sectoral lens to green jobs. Except for in Sweden, little sex-disaggregated information is available.

Statistics **Denmark** has published 'green national accounts' (Statistics Denmark, 2023)<sup>[32]</sup> since 2017 that give systematic overviews of the green economy, where the green economy is defined to cover goods and services produced to either protect the environment or save resources. Green jobs are then seen as employment involved in the production of these goods and services (Cedefop, 2019).<sup>[33]</sup> However, the labour-related statistics available within these 'green national accounts' are not sex-disaggregated. The 2020 Global Climate Action Strategy (Ministry of Foreign Affairs, 2020)<sup>[34]</sup> highlights that, for the county to be in the lead, it must show how to ensure that a socially just and cost-effective transition – with new green jobs and opportunities for more people – will not result in job losses, unequal redistribution, or increased inequality.

In **Finland** there is no one commonly used definition of green jobs (Bruvoll, A., et al., 2012).<sup>[35]</sup> Statistics Finland publishes energy accounts yearly that describe the supply and use of energy in the national economy and between the economy and the environment (Statistics Finland, 2023),<sup>[36]</sup> yet this does not contain labour market information disaggregated at the worker level. Statistics Finland also publishes statistics related to environmental goods and services (Statistics Finland, 2022)<sup>[37]</sup> that look at employment across some 110 industries, but this is not disaggregated by sex, age, or county/area. Finland also publishes environmental protection expenditure accounts (Statistics Finland, 2021).<sup>[38]</sup> In the preparation of Finland's national climate and energy strategy (Ministry of Economic Affairs and Employment, 2022),<sup>[39]</sup> the potential for gender and human impact was assessed (see box later in the report), in addition to impact on the environment, national economy, and central government finances and social and regional impact.

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32. Danish Statistics, 2023. [Green economy](#).

33. Cedefop, 2019. [Skills for green jobs: an update – Denmark](#).

34. Ministry of Foreign Affairs, 2020. [A Green and Sustainable World: Global Climate Action Strategy](#).

35. Bruvoll, A., Ibenholt, K. (ed.), Ahvenharju, S., Bröckl, M., Martinsen, L., and Zandersen, M., 2012. [Measuring green jobs? An evaluation of definitions and statistics for green activities](#). Nordic Council of Ministers.

36. Statistics Finland, 2023. [Energy accounts](#).

37. Statistics Finland, 2022. [Environmental goods and services by year, industry, environmental goods and services class and information](#).

38. Statistics Finland, 2021. [Environmental protection expenditure accounts](#).

39. Ministry of Economic Affairs and Employment, 2022. [Carbon neutral Finland 2035 – national climate and energy strategy](#). Government of Finland.

Statistics **Iceland's** green economy and environment statistics do not include labour force-related statistics (Statistics Iceland, 2022),<sup>[40]</sup> and within the labour force survey (Statistics Iceland, 2023)<sup>[41]</sup> there is no category that obviously relates to green jobs. Interestingly, however, they do showcase skills supply and demand (Statistics Iceland, 2021).<sup>[42]</sup> Within the Sovereign Sustainable Financing Framework (Ministry of Finance and Economic Affairs, 2023),<sup>[43]</sup> there is mention of special projects to facilitate more employment generation and retention capacity should extreme events (e.g. natural disaster, extreme weather events, or public health disasters) occur. The Climate Action Plan does not, however, refer to jobs (Ministry of Climate, 2020).<sup>[44]</sup> The climate change knowledge hub for the City of Reykjavík (City of Reykjavík, 2022)<sup>[45]</sup> focuses on the future of work and gender equality and argues for expanding the definition of green jobs to also include care work so as to prevent inequality among social groups.

Statistics **Norway's** 'environmental accounts' look at environmental protection expenditure in the mining, quarrying, and manufacturing industries, which may include wages, but do not give an overview of employment therein (Statistics Norway, 2022).<sup>[46]</sup> Within the database's labour statistics, there is a category entitled 'environmental clean-up' that looks largely at recycling jobs, with sex-disaggregated data, which is also segregated by county (Statistics Norway, 2023).<sup>[47]</sup> Green growth has been used in Norway to describe growth in industries that deliver environment-related products and services, while the term 'green jobs' is used for jobs in these industries (ETUC, 2011).<sup>[48]</sup> According to Norway's green competitiveness report from 2016, green competitiveness means that new and existing occupations have to transform to achieve a low-carbon, resource-efficient future (Norwegian Government, 2016).<sup>[49]</sup> Norway's competitiveness strategy (Norwegian Government, 2017)<sup>[50]</sup> highlights the need to create new jobs and showcases initiatives with social partners, such as the 2017-2018 campaign for green jobs, which aimed to raise awareness and promote workplace greening actions.

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40. Statistics Iceland, 2022. [Environment and green economy](#).

41. Statistics Iceland, 2023. [Labour Force Survey](#).

42. Statistics Iceland, 2021. [Skills supply and demand](#).

43. Ministry of Finance and Economic Affairs, 2023. [Iceland's Sovereign Sustainable Financing Framework](#). Government of Iceland.

44. Ministry of Climate, 2020. [Iceland's 2020 Climate Action Plan](#). Government of Iceland.

45. City of Reykjavík, 2022. [Future employment](#). Climate Change Knowledge Hub.

46. Statistics Norway, 2022. [Environmental protection expenditure](#).

47. Statistics Norway, 2023. [Employment, register based](#).

48. ETUC, 2011. [Green Economy in Norway: Executive Summary](#).

49. Norwegian Government, 2016. [Executive Summary of Report from the Norwegian Government's Expert Committee for Green Competitiveness](#).

50. Norwegian Government, 2017. [Better growth, lower emissions – the Norwegian Government's strategy for green competitiveness](#).

Statistics **Sweden** collects data on the 'environmental sector', which encompasses 11 different sectors, from air and climate and wastewater management to environmental consultants. This includes employment data covering environmental areas, by county and year and disaggregated by sex (Statistics Sweden, 2023).<sup>[51]</sup> A range of green jobs initiatives have been put into place by the Government, such as an investment of SEK 20 million between 2022 and 2023 to create jobs in nature preservation and forest management for unemployed young people negatively affected by the COVID-19 crisis (Eurofound, 2022).<sup>[52]</sup> Recently, the Government proposed investment of SEK 4 billion for 2024 to support businesses throughout the country that want to change and reduce their emissions, as well as support the expansion of charging infrastructure (Ministry of Climate and Enterprise, 2023).<sup>[53]</sup>

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51. Statistics Sweden, 2023. [Environmental goods and services sector](#).

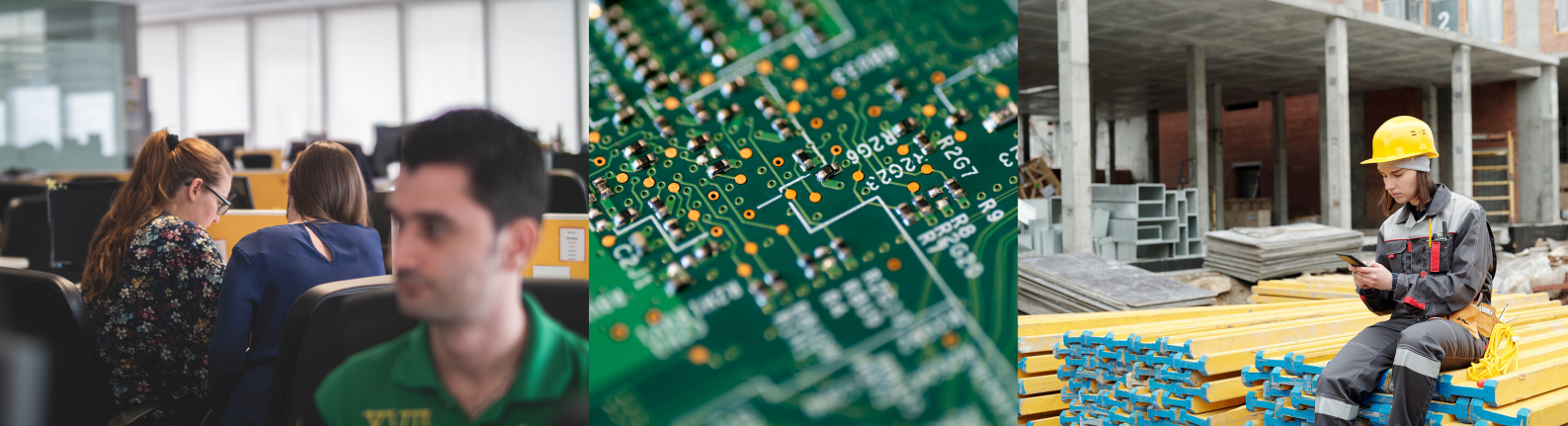
52. Eurofound, 2022. [Governmental investments in green jobs, measure SE-2022-1/2171 \(measures in Sweden\)](#). EU PolicyWatch.

53. Ministry of Climate and Enterprise, 2023. [Klimatklivet och andra klimatsatsningar stärks 2024 med 4 miljarder kronor](#) (available only in Swedish). Government of Sweden.

## SUGGESTIONS: DEFINING GREEN JOBS IN THE NORDIC REGION

- **Analyse currently used approaches to and definitions of green jobs across – and within – Nordic countries** to gauge if they are clear and robust and widely accepted by stakeholders and if they may have a gendered impact. This can be done by examining strategies, policies, and action plans, as well as working knowledge and classifications, across governments and other entities, such as social partners, think-tanks, research institutes, and statistical offices. Building an index of occupational greenness that allows for monitoring the progress made by countries, within countries, across sectors, and among workers can also be explored.
- **Critically assess and scale up the availability of statistics on green jobs disaggregated by sex** and other socio-demographic factors, such as location, age, educational level, and disability and socio-economic status – across the Nordic countries and at the national and sub-national levels – to increase the knowledge base. This can be done through labour force surveys and statistics as well as through more detailed, task-based datasets, information, and analyses.





Photos: Mimi Thian/Unsplash, Magnus Engø/Unsplash, Getty Images

# IN NUMBERS: WHO'S AHEAD? WHO'S FALLING BEHIND IN THE NORDIC GREEN JOBS RACE?

## THE AMBITION: A SOCIALLY SUSTAINABLE REGION

*"Together, we will promote an inclusive, equal, and interconnected region with shared values and strengthened cultural exchanges and welfare."*

**This means that we will:**

Work towards a socially sustainable green transition that does not increase inequalities in Nordic society. These efforts aim to counter socio-economic, cultural, and geographical challenges linked to the green transition.  
(Objective 10)

Source: [Nordic Council of Ministers, 2021](#).

The green transition – of labour markets and the economy, and throughout society – is no longer a question of 'if' but of 'when', and largely a question of 'how'.

The Nordic Region is described as being at the forefront of this transition (Jensen, K., 2023),<sup>[54]</sup> and all countries (for which there is data) have taken on the 'green labour market challenge', with more demand seen for green jobs between 2011 and 2021 (OECD, 2023).<sup>[55]</sup> According to the global management consulting firm McKinsey & Company, nearly one million new jobs could be created by the Nordic

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54. Jensen, K., 2022 (15 November). [The Green Transition in the Nordic Countries: Lessons in Sustainable Development](#). Heinrich-Böll-Stiftung.

55. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide](#).

green transition, capturing up to EUR 130 billion in GDP (Aagaard, P., et al., 2022).<sup>[56]</sup>

Supported by the strong Nordic commitment to working towards achieving a green and gender-equal region (Nordic Council of Ministers, 2022),<sup>[57]</sup> this should be an ideal springboard for achieving the ambitions of a green labour market, gender equality, and competitiveness all at the same time.

At the same time, transitions – be they green, digital, or otherwise – are rarely easy; systemic change does not happen overnight. New OECD figures unveil both gender and geographic gaps in green jobs today. Nothing close to equal gender representation in green jobs has been achieved in any country across the Nordic Region, while those in polluting, or brown, jobs or sectors may see their jobs disappear or fully change. In these jobs, men are overrepresented. The figures also show that green jobs are often in capital cities and surrounding areas, although green jobs are increasing at a faster pace at the sub-national level in the region, where there has already been a high level of 'green intensity' (OECD, 2023).<sup>[58]</sup> This is particularly the case for northern Sweden, which is seeing big new industrialisation and rapid green growth (see, for instance, Wallin, G., 2021).<sup>[59]</sup>

## The good news: green jobs are on the up in the Nordic countries

Although many countries and organisations have outlined generic green job trends, very few have been able to provide detailed statistics on numbers of green jobs, the sectors and occupations they are in, and which genders are in green jobs today (Janta, B., et al., 2023).<sup>[60]</sup> To zoom in on the geographic and social effects of the green transition and link these to employment policy, the OECD has classified green jobs on the basis of the tasks the jobs entail. However, these figures are only a snapshot of how countries in the region are faring with green jobs. For instance, the overview looks only at women and men in green jobs and not at gender diverse people, and, given it is the first study of its kind, certain geographic nuances may not be captured. Furthermore, some figures may not correlate with national-level statistics due to the task-based classification approach.

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56. Aagaard, P., Riis Andersen, J., Dahlqvist, F., and Naucélér, T., 2022 (1 September). [Playing offense to create Nordic sustainability champions](#).

57. Nordic Council of Ministers, 2022. [A Green and Gender-equal Nordic Region: Commitment by the Nordic Council of Ministers under Generation Equality's Action Coalition: Feminist Action for Climate Justice](#).

58. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide](#).

59. Wallin, G., 2021 (29 April). [Green transition brings big industry to northern Sweden](#). Nordic Labour Journal.

60. Janta, B., Kritikos, E., and Clack, T., 2023. [The green transition in the labour market: how to ensure equal access to green skills across education and training systems: Analytical Report](#). European Union.

**Figure 1: Green jobs in the Nordic Region**

**Source:** OECD, [2023](#). See individual country profiles for [Denmark](#), [Finland](#), [Iceland](#), [Norway](#), and [Sweden](#).

| Country                      | Workers in green jobs (total men and women) | Women in green jobs | Men in green jobs | Workers in 'polluting' jobs (total men and women) |
|------------------------------|---------------------------------------------|---------------------|-------------------|---------------------------------------------------|
| Denmark                      | 23.6%                                       | 29.3%               | 70.7%             | 10.1%                                             |
| Finland                      | 23.6%                                       | 29.3%               | 70.7%             | 14.9%                                             |
| Iceland                      | 22.9%                                       | 29%                 | 71%               | 11.5%                                             |
| Norway                       | 26.3%                                       | 29.4%               | 70.6%             | 11.1%                                             |
| Sweden                       | 26.6%                                       | 34.4%               | 65.6%             | 11.1%                                             |
| Nordic average (5 countries) | 24.6%                                       | 30.28%              | 69.72%            | 11.74%                                            |
| OECD average (30 countries)  | 17.6%                                       | 28.3%               | 71.7%             | 11.7%                                             |

**Note:** These OECD-generated statistics are based on O\*NET's Green Task Development Project, which identifies occupations affected by green economy activities and the emergence of new green technology, with almost 1,400 tasks considered green across occupations. O\*NET identified two types of occupations with green tasks: **green new and emerging occupations** (new jobs created in response to green economy activities and the emergence of new green technologies, such as wind energy engineers) and **green enhanced skills occupations** (occupations where tasks performed have significantly transformed in response to green economy activities and the emergence of new green technologies, such as construction and building inspector). Learn more: [O\\*NET's Green Task Development Project](#).

It is estimated that just under 18 per cent of workers in OECD countries were in green jobs in 2021 – or in jobs with substantially (i.e. 10 per cent or more) green tasks. The Nordic Region has significantly higher figures: **24.6 per cent of workers were in green jobs** that year. Sweden had the highest average across the Nordic countries, with 26.6 per cent of workers being in green jobs, while the other Nordic countries do not fall far behind.

All regions in **Denmark, Finland, Iceland,** and **Sweden** saw an increase in the share of green jobs in their labour force between 2011 and 2021. **Norway** saw demand for green jobs grow by four per cent between the first quarter of 2019 and the first quarter of 2021, but the relative growth varied greatly at the sub-national level. However, **only slightly more than 30 per cent – or less than a third – of all green workers in the Nordic Region are women.**

### GREEN JOBS ARE IN DEMAND IN DENMARK

Supported by a fast 'greening' of labour demand, Southern Denmark and Central Jutland are estimated to be on track to join the group of regions with the highest share of green jobs across the OECD.

Source: [OECD, 2023](#).

## Beware! Many are at risk of falling behind in the 'green jobs race'

Nordic women are underrepresented in green jobs, although all countries in the region find themselves today slightly above the OECD average of 28.3 per cent female workers in the green economy. Sweden is the Nordic country with the highest share of women in green jobs – at 34.4 per cent – while the other countries are hovering around the 29 per cent mark. The Baltic states are the closest to achieving equal representation of women and men in green jobs in the OECD countries. In Lithuania, Latvia, and Estonia, women represent at least 39 per cent of those working in green jobs (Zakrzewska, A., and Fitzgerald, L., 2023).<sup>[61]</sup>

On average, 11.74 per cent of workers in the Nordic Region, about the same as in all OECD countries, were in 'polluting' or brown jobs in 2021. In Finland, this figure was higher than in other countries in the region, at 14.9 per cent of workers. As it is

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61. Zakrzewska, A., and Fitzgerald, L., 2023. [Empowering women to power the green transition](#). OECD blog.

estimated that the vast majority of these jobs (83.4 per cent across the OECD) were held by men (OECD, 2023), these workers find themselves at risk of either losing their jobs or having their jobs transformed as part of the green transition. In practical terms, many (mostly male) workers in these industries will, either now or shortly, face a difficult choice: developing new green skills or risking unemployment. Both scenarios will require timely and adequate policy responses.

According to the OECD's analysis, in the Nordic countries, and elsewhere, capital cities and the surrounding areas have so far been leading the way in green job creation and are a step ahead when it comes to closing gender gaps. A reason for this may be that capital cities and the surrounding areas have a higher concentration of highly skilled workers, which in turn affects demand for and growth in green job opportunities.

- **Denmark:** In Copenhagen, 38.5 per cent of green jobs were held by women. In Northern Jutland, however, only 19.1 per cent of green jobs were held by women.
- **Finland:** In Helsinki-Uusimaa, 35.2 per cent of green jobs were held by women, whereas women accounted for only 24.1 per cent of those in green jobs in eastern and northern parts of the country.
- **Norway:** Women held 33.4 per cent of green jobs in Oslo and Viken, while women accounted for only 24.1 per cent of those in green jobs in Agder and Sør-Østlandet.
- **Sweden:** In Stockholm, 40.8 per cent of green jobs were held by women. OECD figures show that, in comparison, women accounted for only 27.1 per cent of those in green jobs in Central Norrland in 2021.

These figures paint only part of the picture, however. The Nordic Region has taken the global lead in green industry and technology development, spanning areas such as biogas, offshore wind and geothermal energy, battery production and electric transport, digitalisation technology, carbon-free steel, geological storage of carbon dioxide, and forest-based bioeconomy (Sand, J., 2023).<sup>[62]</sup> Most of this development is taking place outside of the capitals, in more remote areas.

Between the start of 2019 and early 2021, the demand for green jobs grew by 75.5 per cent in Sweden (OECD, 2023).<sup>[63]</sup> Industries are shifting away more and more from unsustainable practices, while massive investments are being made in green technology in northern Sweden, including the investment of SEK 1,000 billion in green industrial establishments over the coming two decades (Northern Sweden

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62. Sand, J., 2023. [Gender perspective on green jobs in the Nordic Region: A collection of results from NIKK 2020–2022](#). Nordic Council of Ministers.

63. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide: Sweden Country Profile](#).

CleanTech, 2022).<sup>[64]</sup> It is estimated that between 100,000 and 300,000 workers will be needed to support this transition in northern Sweden, in both direct and indirect jobs (Nordregio, 2022).<sup>[65]</sup> This brings a need for more housing, infrastructure, and services such as schools and healthcare, in addition to skills development programmes. Already, thousands of jobs have been created, attracting workers from all over the world, often engineers, operators, and other technical experts (Wallin, G., 2021).<sup>[66]</sup>

A study looking at the development process of the Swedish EU Territorial Just Transition Plan (Moodie, J., et al., 2021)<sup>[67]</sup> highlights labour shortages and a demographic decline, which limit the local talent pool. With strongly gender-segregated labour markets in the areas where large-scale transformation is taking place, it argues for attracting more women to jobs in traditionally male-dominated sectors that are key to the green transition, locally, as one solution. Another area for action is support for students (mostly male) towards completion of higher education. Overall, these massive green investments bring not only livelihood opportunities in communities but also challenges in terms of ensuring that all women and men in their diversity can respond to increased pressures for industrial restructuring, reskilling, and evolving occupational and regional mobility. This will demand more analysis and policy action going forward (Alsos, K. and Dølvik, J.E. (eds.), 2021).<sup>[68]</sup>

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64. Northern Sweden CleanTech, 2022 (2 June). [This Is How Sweden Will Lead the Green Transition](#).

65. Nordregio, 2022 (30 November). [Nordregio Forum 2022 tackles the green transition and the mismatch in the labour market](#).

66. Wallin, G., 2021 (29 April). [Green transition brings big industry to northern Sweden](#). Nordic Labour Journal.

67. Moodie, J., Tapia, C., Löfving, L., Sánchez Gassen, N., and Cedergren, E., 2021. [Towards a Territorially Just Climate Transition—Assessing the Swedish EU Territorial Just Transition Plan Development Process](#). Nordregio.

68. Alsos, K., and Dølvik, J.E. (eds.), 2021. [The Future of Work in the Nordic Countries: Opportunities and Challenges for The Nordic Working Life Models](#). Nordic Council of Ministers.

## FINLAND GOT INFORMED: A GENDER LENS ON CLIMATE ACTIONS

When Finland formulated its national climate and energy strategy, it assessed the strategy's gender impacts. It looked at how proposed policy measures would affect men and women across six sectors: energy production, construction and buildings, transport, industry, the service sector, and agriculture.

'The assessment shows that gender mainstreaming in the design of measures is important for both equality and the acceptability and effectiveness of climate action.'

It found that policy measures would mainly affect male-dominated sectors, with solutions that would be of greater interest to men and affect their consumer habits. Economic activity and employment would be positive in energy production, construction, transport, industry, and forestry, although certain male-dominated 'brown' jobs, in fossil fuels in particular, were likely to disappear.

On the other hand, it found that most of the negative effects would be felt in female-dominated service sectors, and called for action for more gender-aware climate budgeting and identified an urgent need to dismantle occupational gender segregation, especially in green job sectors. It recommended increasing women's education, both for those sectors benefiting from climate measures and for energy-related tasks in the service sector.

The assessment recommended focusing on measures that increase women's inclusion in climate policy, which would be a win-win and lead to greater reductions in emissions.

Source: [Ministry of Economic Affairs and Employment of Finland, Gender impact of the upcoming Climate and Energy Strategy assessed, 2021](#)



## SUGGESTIONS: QUANTIFYING AND ANALYSING THE NORDIC GREEN JOB (GENDER) DIVIDE

- **Generate analyses based on regularly reported national sex-disaggregated and gender-sensitive data**, from climate-relevant institutions and companies, on who and where is ahead and who is falling behind in accessing Nordic green jobs. This can include creating a common Nordic platform with information and resources, for comparative purposes, that also includes intersecting issues such as gender-related information.
- **Develop common Nordic guidelines and procedures for gender-impact assessments of climate policies, programmes, and projects** for use across the countries. These assessments could be used to gain knowledge about who the green transition will benefit and should be targeted, so as to ensure the effectiveness of climate actions.
- **Map and analyse possible industries or sectors at risk of fundamental change and/or closure in the green transition**, and identify which workers are at risk of job losses, at the national and sub-national levels and also across the Nordic Region as a whole.



Photos: Eeva Anund/Business Finland, Maskot/Folio/Image Bank Sweden, Lena Granefelt/Image Bank Sweden

# THE GENDER GAP IN NORDIC GREEN JOBS EXPLAINED: PUTTING BARRIERS IN THE SPOTLIGHT

## THE AMBITION: A SOCIALLY SUSTAINABLE REGION

*"Together, we will promote an inclusive, equal, and interconnected region with shared values and strengthened cultural exchanges and welfare."*

### This means that we will:

Work to involve everyone living in the Nordic Region in the green transition and digital developments, utilise the potential of this transition, and counteract the widening of gaps in society as a result of this transition. (Objective 10)

Source: [Nordic Council of Ministers, 2021](#).

High levels of horizontal and vertical occupational gender segregation are stumbling blocks to be overcome if the Nordic Region intends to ensure that everyone gets to harness green opportunities. Occupational segregation benefits no-one in the transition. As women are underrepresented in science, technology, engineering, and mathematics (STEM) roles, there will also be a gender imbalance in those historically male-dominated sectors and industries seen as essential to meet Nordic climate goals (Lander Svendsen, N., et al.,

2022).<sup>[69]</sup>

This gender gap comes on top of, and leads to, a considerable pay gap that is narrowing far too slowly in the region (Nordic Co-operation, 2018).<sup>[70]</sup> On the other hand, if done right, green labour market policies also have the power to transform and bridge these gender gaps (Kimbrough, K., 2021).<sup>[71]</sup>

## More women are stepping into male-dominated sectors and management, but is this enough?

Women have taken two out of every three new jobs created over the last two decades in the EU (Eurofound, 2021),<sup>[72]</sup> and women the world over – including in the Nordic Region – have entered higher-paying, historically male-dominated STEM fields. However, in the Nordic Region, many argue that the gap between the types of work that men and women do is wider than across the rest of the EU (Elkjær Sørensen, A., 2019).<sup>[73]</sup>

Given the current occupational gender segregation, women are on course to land only a fraction of the new green jobs created (ILO, 2022),<sup>[74]</sup> as these jobs are in male-dominated sectors (such as energy, construction, industry, mobility, and forestry).

Although sectors such as software and IT services, manufacturing, and public safety are hiring more women into leadership roles globally (Carpenter, J., 2018),<sup>[75]</sup> women fill just 21 per cent of management jobs in STEM and 14 per cent of management jobs in science, engineering, and technology occupations (Lander Svendsen, N., et al., 2022).<sup>[76]</sup> In the Arctic region, the horizontal occupational gender segregation picture is similar to that in the rest of the Nordic Region, as most women work in the public sector, while more men work in industry (Smieszek, M.G., and Prior, T., 2021).<sup>[77]</sup>

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69. Lander Svendsen, N., Weber, K., Factor, G., Engelsbak, L.W., and Fischer-Bogason, R., 2022. [How climate policies impact gender and vice versa in the Nordic countries](#). Nordic Council of Ministers.

70. Nordic Co-operation, 2018. [The Nordic Gender Effect at Work](#).

71. Kimbrough, K., 2021 (23 September). [These are the sectors where green jobs are growing in demand](#). World Economic Forum.

72. Eurofound and European Commission Joint Research Centre, 2021. [European Jobs Monitor 2021: Gender gaps and the employment structure](#). European Jobs Monitor series.

73. Elkjær Sørensen, A., 2019 (22 February). [Gender segregation in the Nordic labour market](#).

74. ILO, 2022. [Just transition: An essential pathway to achieving gender equality and social justice](#).

75. Carpenter, J., 2018 (30 September). [The gender gap isn't about what you make. It's about what you do](#). CNN.

76. Lander Svendsen, N., Weber, K., Factor, G., Engelsbak, L.W., and Fischer-Bogason, R., 2022. [How climate policies impact gender and vice versa in the Nordic countries](#). Nordic Council of Ministers.

77. Smieszek, M.G., and Prior, T., 2021. [Pan-Arctic Report. Gender Equality in the Arctic, Phase 3](#). Gender and Environment. Arctic Council.

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***We're trying to move the workforce from the most polluting sectors, like oil, gas and coal, the vast majority of whom are men, to sustainable technology sectors. But in doing so, we're reproducing the gender segregated labour market in the green transition.***

MONTSERRAT MIR, SPECIAL ADVISER, ITUC JUST TRANSITION CENTRE

Source: [Nordic Council of Ministers, 2022](#)

## **POWERING AN END TO THE GENDER GAP AT REYKJAVÍK ENERGY IN ICELAND**

Orkuveita Reykjavíkur (OR), also known as Reykjavík Energy, is a public utility and Iceland's largest producer of geothermal energy. The company generates revenue by supplying electricity, providing hot and cold water, treating wastewater, and providing telecommunications infrastructure. Its service area extends to 20 municipalities and covers 67 per cent of the Icelandic population.

With a male-dominated workplace culture, frequent long working hours and shift work, in 2011, its leadership decided to tackle various gender gaps, including the gender pay gap of about seven per cent in favour of men and the issues around better reconciling working hours with caregiver responsibilities. The aim was to create a more equitable work environment and attract more women to the company, with the result of greater job satisfaction for both female and male workers, without a drop in productivity. In 2017, the company closed the gender pay gap and managed since then to keep it near zero per cent. In 2018, Iceland introduced the first policy in the world that requires companies and institutions with more than 25 employees to prove that they pay men and women equally for a job of equal value.

'Gender equality is an important part of human rights. It is the duty of the executive management to execute gender equality. Will and determination is all you need!'

– Bjarni Bjarnason, CEO of Orkuveita Reykjavíkur

Sources: [Fridriksson, T., Schomer, J.L., and Janik, V. L., Gender Equality in the Geothermal Energy Sector: Road to Sustainability, 2019](#), and [Reykjavík Energy: Our journey to a more equal and better workplace by Bjarni Bjarnason, 2019](#).



## ***Segregation breeds segregation.***

MARI TEIGEN, RESEARCH DIRECTOR AT THE NORWEGIAN INSTITUTE FOR SOCIAL RESEARCH AND DIRECTOR OF THE CENTRE FOR RESEARCH ON GENDER EQUALITY

Source: NIKK, 2015.

## **Breaking down gender barriers to green jobs**

The extent to which gendered norms, values, and/or patterns are accepted and perpetuated by – and in – climate institutions' decision-making is beginning to enter the spotlight. There is also a need for more studies that look at both enablers and barriers to mainstreaming gender in climate strategies and policies (Lander Svendsen, N., et al., 2022).<sup>[78]</sup>

This is also being looked at through a sectoral lens. A global survey on gender and renewable energy showed that cultural and societal norms, combined with a lack of gender-sensitive and transformative policies, training, and mentorship opportunities and inequity in asset ownership, were seen as more important barriers than a lack of skills (IRENA, 2019).<sup>[79]</sup>

Both the way we are brought up and socialised and the way we are educated play a role in gender-based recruitment (Sand, J., 2023).<sup>[80]</sup> Although at least 20 million women across the OECD need to switch to green jobs (Janta, B., et al., 2023)<sup>[81]</sup> to achieve equal representation of women and men, horizontal occupational segregation has been proved to lead to a more inflexible workforce and working structures, where workers prefer to stay within their male- or female-dominated fields, due to a possible risk of gender discrimination in another field, for example. For those in unskilled or low-skilled traditionally male jobs who are now at risk of losing their livelihoods due to new technologies and the green transition, this lack of flexibility could prove a challenge. Gender segregation in the region also leads to a loss of talent: if certain jobs are seen as for only women or only men, employers risk not being able to recruit enough workers or missing out on those who are most qualified (Elkjær Sørensen, A., 2019).<sup>[82]</sup>

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78. Lander Svendsen, N., Weber, K., Factor, G., Engelsbak, L.W., and Fischer-Bogason, R., 2022. [How climate policies impact gender and vice versa in the Nordic countries](#). Nordic Council of Ministers.

79. IRENA, 2019. [Renewable Energy: A Gender Perspective](#).

80. Sand, J., 2023. [Gender perspective on green jobs in the Nordic Region: A collection of results from NIKK 2020–2022](#). Nordic Council of Ministers.

81. Janta, B., Kritikos, E., and Clack, T., 2023. [The green transition in the labour market: how to ensure equal access to green skills across education and training systems: Analytical Report](#). European Union.

82. Elkjær Sørensen, A., 2019 (22 February). [Gender segregation in the Nordic labour market](#).

Many countries, including in the Nordic Region, have stepped up efforts to fight gender-segregated labour markets at various levels. Some of these efforts include strategic actions through national gender equality, anti-discrimination, or education policies, and others include initiatives that recognise the pervasiveness of the problem at large. There are also industry-specific interventions – the approach taken by most – with the goal of tackling recruitment based on gender. Improving conditions for those who are the minority group at work and in schools – regardless of gender – could be a key means to combat stereotypical educational choices when it comes to gender and a gender-segregated labour market (Sand, J., 2023).<sup>[83]</sup>

## NORWAY WANTS MORE WOMEN ONBOARD IN THE 'BLUE ECONOMY'

Norway is Europe's largest fishing nation and the ninth-largest fishing nation worldwide. In 2020, Norway exported a record of NOK 31.6 billion in fish and fish products.

The fishing profession, however, is one of the most gender-segregated occupations in Norway, which results in large disparities in wealth and income distribution. According to the Norwegian Fisher Census, between 2008 and 2019 the proportion of female part-time fishers was on average 3.3 per cent, whereas 2.7 per cent of women were full-time fishers. Men also stay twice as long in the profession as women, on average.

For this reason, the Government launched a strategy in 2021 aiming to make it easier for more women to become fishers and to help ensure that those women who choose to become fishers stay longer in the industry. If women, on an equal footing with men, have access to a tradition-rich and value-creating industry, they will also have a stronger say in how sustainable fishery is managed.

The strategy contains measures that will contribute to identifying and removing gender barriers – such as childcare, the composition of governing bodies, and attitudes towards women – to ensure that all genders will have equal opportunities to establish themselves in the profession. As part of the strategy, the Ministry of Trade, Industry and Fisheries also set aside NOK 1.5 million for an application-based grant scheme to increase female recruitment and establish networks for female fishers.

Sources: [Ministry of Trade, Industry and Fisheries, Fiskeringsjonen Noreg, 2021](#), and [Ministry of Trade, Industry and Fisheries, Vil ha flere kvinner om bord, 2021](#) (both available only in Norwegian).

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83. Sand, J., 2023. [Gender perspective on green jobs in the Nordic Region: A collection of results from NIKK 2020–2022](#). Nordic Council of Ministers.

Ensuring that more female entrepreneurs participate – on an equal footing – in green innovation can also offer a win-win scenario, as innovation can be both a source of highly-skilled green jobs and a boost to overall productivity (OECD, 2021).<sup>[84]</sup> Yet, this will require rejigging the ‘entrepreneurial ecosystem’ and learning more about gender biases and effective actions to counter it. In the Nordic Region, female entrepreneurs outperform male entrepreneurs by a staggering 45 per cent when it comes to the revenue-to-funding ratio; and where entrepreneur teams are either woman-driven and -led or led by both women and men, they are more than 70 per cent more likely than exclusively male-driven teams to have a positive impact on sustainability goals among startups. Yet, investors in the region spend EUR 92 out of 100 on male entrepreneurs, according to the 2021 Startup Funding Report (Nordic Innovation, 2022).<sup>[85]</sup> A study in Norway found that only one-third of green innovation projects were ‘women-oriented’ (meaning that women started the project, were co-owners, or aimed to raise the skills of female staff) (Kilden, 2022).<sup>[86]</sup> There are also differences in the focus areas of female- and male-founded startups. Most male-founded startups operate in the technologies space, whereas most female-founded startups are in traditionally female-dominated areas, such as the reuse and repair of household goods, small electronic appliances and devices, clothing and healthcare (see, for instance, Nordic Innovation, 2022, and Kilden, 2022).

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***Care is fundamental to the wellbeing of individuals and societies, to economic prosperity and the preservation of the planet. Addressing care deficits in infrastructures, policies and services is central to advancing and achieving gender equality and social justice. It is of utmost importance to invest in the care economy to create jobs with decent work, reduce gender and intersecting inequalities, and improve health and well-being. The ILO estimates that proper investment in the care economy could generate almost 3000 million jobs across the world by 2035.***

EMANUELA POZZAN, ILO SENIOR GENDER SPECIALIST

Source: [The ILO, 2022](#).

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84. OECD, 2021. [Gender and the Environment: Building the Evidence Base and Advancing Policy Actions to Achieve the SDGs. POLICY HIGHLIGHTS](#).

85. Nordic Innovation, 2022 (18 July). [Why more entrepreneurial diversity is crucial for the Nordics](#).

86. Kilden, 2022. [Gender equality and the green transition of the labour market: Policy brief](#)



## Care and education jobs: drivers of sustainable growth?

We cannot fight climate change without taking care of places and everything in nature and of each other – which includes making sure that current and future generations are well prepared to withstand and mitigate climate crises (Novello, A., and Carlock, G., 2019).<sup>[87]</sup> Those jobs that meet the physical, mental, intellectual, and emotional needs of everyone – adults and children, old and young, fragile and able-bodied – are foundational to our societies (ILO, 2018).<sup>[88]</sup> Most jobs in the education and health sectors also have minor – if any – emission impact (A Feminist New Green Deal, 2021).<sup>[89]</sup> This means that, for any sustainability agenda to succeed, investments in and the value given to caring and educating must be scaled up (Novello, A., and Carlock, G., 2019).<sup>[90]</sup>

Climate change has heightened the intensity of care work and is likely to continue to do so (MacGregor, S., et al., 2022).<sup>[91]</sup> More care work will be needed, often with less, due to more injuries and more infectious disease spreading, but also due to a strain on providers' operations, such as damaged facilities and disrupted supply chains (Hariharan, K., et al., 2022).<sup>[92]</sup> Looking ahead, we can see that educating current and future generations to take charge of the green transition will also be key to lasting success (Novello, A., and Carlock, G., 2019).<sup>[93]</sup> This will make these education and care jobs more demanding, and the unequal distribution of who does this work is likely to be exacerbated (MacGregor, S., et al., 2022).<sup>[94]</sup> In the Nordic Region, an average of 80.1 per cent of those working in healthcare in the last quarter of 2020 were women (Eurostat, 2022).<sup>[95]</sup> From early childhood education to the upper secondary level, women in the Nordic countries are also the majority of teachers – 93.8 per cent of early childhood or pre-school teachers are women, and women make up 56.36 per cent of upper-secondary teachers (Eurostat, 2023).<sup>[96]</sup> Yet, trends show that 'green talent' and green skills are on the rise outside of traditional green jobs in these sectors, particularly in healthcare (Kimbrough, K., 2021).<sup>[97]</sup> Studies also show growing motivation in the healthcare profession to minimise the sector's environmental impact (Stanford, V., et al., 2023).<sup>[98]</sup>

Whereas green jobs programmes could incentivise shifting out of (much-needed)

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87. Novello, A., and Carlock, G., 2019. [Redefining Green Jobs for a Sustainable Economy](#). The Century Foundation.

88. ILO, 2018. [Care work and care jobs for the future of decent work](#).

89. A Feminist New Green Deal Coalition, 2021 (April). [Care and Climate: Understanding the Policy Intersections](#).

90. Novello, A., and Carlock, G., 2019. [Redefining Green Jobs for a Sustainable Economy](#). The Century Foundation.

91. MacGregor, S., Arora-Jonsson, S., and Cohen, M., 2022. [Caring in a changing climate: Centering care work in climate action](#). Oxfam.

92. Hariharan, K., Cernigoi, A., Saffioti, C., and Cosslett, C., 2022 (12 August). [It's time for healthcare to accelerate its climate journey](#). World Economic Forum.

93. Novello, A., and Carlock, G., 2019. [Redefining Green Jobs for a Sustainable Economy](#). The Century Foundation.

94. MacGregor, S., Arora-Jonsson, S., and Cohen, M., 2022. [Caring in a changing climate: Centering care work in climate action](#). Oxfam.

95. Eurostat, 2021. [Health workers \(third quarter of 2020\)](#).

96. Eurostat, 2023. [Female teachers - as % of all teachers, by education level](#).

97. Kimbrough, K., 2021 (23 September). [These are the sectors where green jobs are growing in demand](#). World Economic Forum.

98. Stanford, V., Barna, S., Gupta, D., and Mortimer, F., 2023. [Teaching skills for sustainable health care](#). The Lancet.

care and education jobs into higher-carbon-intensity and production-oriented fields (Novello, A., and Carlock, G., 2019),<sup>[99]</sup> the care and education sectors could offer sustainable job opportunities for men transitioning out of polluting 'brown' jobs, no matter where they live. Health and education workers are also key to ensuring that more women have opportunities to enter and climb the ladder in clean energy or other traditional green jobs should they wish (A Feminist New Green Deal, 2021).<sup>[100]</sup> For this to become a reality, however, mindsets that associate 'caring' with the feminine have to be changed through an integrated approach that also improves working conditions in the care sector.

Everyone is needed in the green shift, whether or not they are in what today are considered green jobs, and many argue that it is necessary to expand our idea of what a green job actually is to include a number of sectors that are crucial to a sustainable economy (see, for instance, Valero, A., et al., 2021).<sup>[101]</sup> Analysing a particular subset of industries or tasks limits the definition of green jobs as this does not include those already low-carbon jobs that will play a central role in countries' and societies' journey towards net-zero (Valero, A., et al., 2021).<sup>[102]</sup> Research from Iceland (Hallgrímsdóttir, B., 2022)<sup>[103]</sup> argues that, as green jobs are a newer concept, the government has more freedom to place its focus on industries and occupations that have so far been left out of the green shift, such as care work. Care work is the backbone of our society, and this type of work is indispensable, while also being low in carbon and greenhouse gas emissions. Hallgrímsdóttir advocates for further developing and improving the working conditions of these jobs in connection with the green economy, as more and more people need care, while daycare is a necessary in order for many people to be economically productive (Hallgrímsdóttir, B. 2022).<sup>[104]</sup> This trend is also seen elsewhere. More organisations are promoting the inclusion of educators and carers as green workers (see, for instance, Novello, A., and Carlock, G., 2019, and A Feminist New Green Deal, 2021), given the value and importance of green jobs, often shown through higher wages. Certain countries, such as the United Kingdom, include education, human health, and social work in their green jobs and green sector classifications to gauge how to make all occupations greener (LeBlanc, L., and McIvor, C., 2020).<sup>[105]</sup>

For a regenerative economy to thrive, care and education jobs in all forms must be valued and respected, which will require breaking down the stigma of who does paid and unpaid work (A Feminist New Green Deal, 2021).<sup>[106]</sup> Having more men

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99. Novello, A., and Carlock, G., 2019. [Redefining Green Jobs for a Sustainable Economy](#). The Century Foundation.

100. A Feminist New Green Deal Coalition, 2021 (April). [Care and Climate: Understanding the Policy Intersections](#).

101. Valero, A., Li, J., Muller, S., Riom C., Nguyen-Tien, V., and Draca, M., 2021. [Are 'green' jobs good jobs? How lessons from the experience to-date can inform labour market transitions of the future](#). London School of Economics and Political Science.

102. Valero, A., Li, J., Muller, S., Riom C., Nguyen-Tien, V., and Draca, M., 2021. [Are 'green' jobs good jobs? How lessons from the experience to-date can inform labour market transitions of the future](#). London School of Economics and Political Science.

103. Hallgrímsdóttir, B., 2022. [A just and fair transition to carbon neutrality: Gender equality aspects in environmental and climate issues](#).

104. Hallgrímsdóttir, B., 2022. [A just and fair transition to carbon neutrality: Gender equality aspects in environmental and climate issues](#).

105. LeBlanc, L., and McIvor, C., 2020 (22 September). [Gender and the green transition](#). Nesta.

106. A Feminist New Green Deal Coalition, 2021 (April). [Care and Climate: Understanding the Policy Intersections](#).

enter these fields will help diminish both horizontal and vertical occupational gender segregation over time (European Union, 2022)<sup>[107]</sup> and can help to reduce the gender pay gap, as more men would enter care work if they were valued with higher wages. For this to happen, gender norms that place women in care and education sectors and men in fossil-fuel sectors, for instance, must be deconstructed, while investments in the care economy must be boosted.

## SUGGESTIONS: PUTTING BARRIERS IN THE SPOTLIGHT

- **Map and critically review institutionalised gendered norms and patterns to address barriers and gaps to gender mainstreaming.** This could occur as part of gender impact assessments or as stand-alone reviews across institutions and agencies or through pilot programmes. Developing guidance or processes for such mappings or reviews should also be considered. Sharing findings and lessons learnt, positive developments, and challenges would be an essential component of raising awareness and knowledge.
- **Make sure, through policies and knowledge, that new green jobs do not reinforce gender stereotypes** and that investment in foundational care economy and education jobs is increased. This is key to ensuring these jobs are valued, and remunerated accordingly, to attract and retain women and men in all their diversity. Social dialogue and collective bargaining are also important tools to address labour segregation and discrimination, and trade unions and employers' organisations can play important roles in promoting a 'gender-just' transition.
- **Aim to improve the conditions of those who are underrepresented in their occupation in order to address segregated labour markets.** This could be done through analysing – with a view to bettering – specific challenges faced by the underrepresented genders in particular sectors, industries, occupations, and ensuring targeted actions, based on findings, to help retain and attract talent of all women and men in their diversity in these jobs, which could also help fight gendered study choices.

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107. European Union, 2022. [What if care work were recognised as a driver of sustainable growth?](#)



Photos: Ann-Sofi Rosenkvist/Image Bank Sweden, Niclas Jessen/Visit Denmark, Yadid Levy/norden.org

# ALL HANDS ON DECK? GREEN SKILLS FOR A SUSTAINABLE AND GENDER-EQUAL NORDIC FUTURE

## THE AMBITION: A COMPETITIVE NORDIC REGION

*"Together, we will promote green growth in the Nordic Region based on knowledge, innovation, mobility, and digital integration."*

**This means that we will:**

**Develop skills and well-functioning labour markets that match the requirements of the green transition in the Nordic Region. (Objective 7)**

Source: [Nordic Council of Ministers, 2021](#).

The ILO estimates that 24 million jobs worldwide could be created by the green economy by 2030 alone (ILO, 2018).<sup>[108]</sup> But who is set to fill these roles? And what skills will be needed to enable a just transition, the shift towards green jobs, and the fight against the adverse effects of climate change? Although some overviews show that the share of 'green talent' has grown by almost 40 per cent since 2015 (LinkedIn, 2022),<sup>[109]</sup> many are of the opinion that we are not close to having the level of skills required to meet Europe's greening aims (Timis, D.A., 2023).<sup>[110]</sup> Differences in how well prepared people are for a green future and what skills they

108. ILO, 2018. [World Employment and Social Outlook 2018: Greening with Jobs](#).

109. LinkedIn, 2022. [Global Green Skills Report 2022](#).

110. Timis, D.A., 2023 (2 May). [Europe needs a green skills revolution to harness solar and wind](#). World Economic Forum.

have, however, often depend on structural inequalities such as gender and also location, class, ethnicity, age, and ability (Janta, B., et al., 2023).<sup>[111]</sup> Whether or not a region has been able to reap the benefits of the green transition until now is linked to the skills available in the local labour market as well as the industrial composition (OECD, 2023).<sup>[112]</sup>

Anticipating skills needs and identifying mismatches, while investing in and strengthening systems that can ensure equitable access to portable, core, semi-technical, and technical skills for all, is key to ensuring a just transition (ILO, 2023).<sup>[113]</sup> So far, green skills have been seen as those specific technical skills needed for traditional green jobs, but more green skills are emerging across occupations, as employers are placing more emphasis on making sustainability key to any business (Kimbrough, K., 2021).<sup>[114]</sup> Green skills that ensure greener and more sustainable behaviour in any sector (or aspect of life) and those that change individual and structural factors that worsen the climate crisis are also essential to reaching our goals (Janta, B., et al., 2023).<sup>[115]</sup> This means that acquiring the skills adults need to thrive in the green transition will required a twin approach that looks at the range of technical and core/portable skills, with skills policies being tailored to local contexts (OECD, 2023).<sup>[116]</sup>

## WHAT ARE GREEN SKILLS?

'Skills and competences, but also the knowledge, abilities, values, and attitudes needed to live, work and act in resource-efficient and sustainable economies and societies. They are:

**Technical:** Required to adapt or implement standards, processes, services, products and technologies to protect ecosystems and biodiversity, and to reduce energy, materials and water consumption. Technical skills can be occupation-specific or cross-sectoral.

**Core, portable or transferable skills:** Linked to sustainable thinking and acting, relevant to work (in all economic sectors and occupations) and life. Alternatively referred to as "sustainability competences", "life skills", "soft skills" or "transversal skills".'

Source: [EU, 2022](#).

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111. Janta, B., Kritikos, E., and Clack, T., 2023. [The green transition in the labour market: how to ensure equal access to green skills across education and training systems; Analytical Report](#). European Union.

112. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide](#).

113. ILO, 2023. [Resolution concerning a just transition towards environmentally sustainable economies and societies for all](#). International Labour Conference, 111<sup>th</sup> Session.

114. Kimbrough, K., 2021 (23 September). [These are the sectors where green jobs are growing in demand](#). World Economic Forum.

115. Janta, B., Kritikos, E., and Clack, T., 2023. [The green transition in the labour market: how to ensure equal access to green skills across education and training systems; Analytical Report](#). European Union.

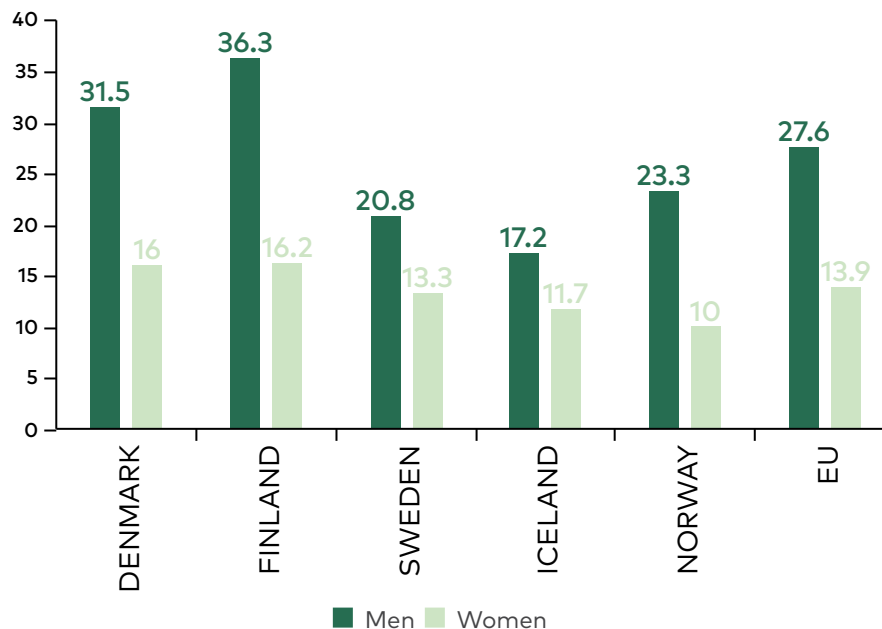
116. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide](#).

## Time to stem gender inequalities in STEM?

Disaggregating and defining green skills by gender is a complicated task. According to the LinkedIn Economic Graph report (LinkedIn, 2022),<sup>[117]</sup> there were 62 women for every 100 men considered 'green talent' in 2021 among more than 800 million users, with only minor improvements seen since 2015. At the same time, studies show that if women participated in STEM at the same level as men, the green economy – including startups – would see an 'infusion' of creative green talent (Sqalli, Z., et al., 2021).<sup>[118]</sup>

**Figure 2:** STEM graduates by sex in 2020 per 1,000 of the population aged 20-29

Source: [Eurostat, 2022](#).



Yet, talent scarcity, in recent years, has been one of the key lenses through which governments and businesses see the world of work (Dehaze, A., 2022).<sup>[119]</sup> As women are underrepresented in technology-driven jobs such as engineering, they are often singled out as an underutilised talent pool (Sand, J., 2023),<sup>[120]</sup> with assumptions being made about women being 'less interested' in technology, even though their potential contributions to the high-tech world of work and their

117. *Supra* note. LinkedIn, 2022. [Global Green Skills Report 2022](#).

118. Sqalli, Z., Unnikrishna, S., Mejri, N., Dupoux, P., George, R., and Zrikem, Y., 2021 (29 October). [Why Climate Action Needs a Gender Focus](#).

119. Dehaze, A., 2022 (7 January). [Here are 6 world of work trends expected to shape 2022](#). World Economic Forum.

120. Sand, J., 2023. [Gender perspective on green jobs in the Nordic Region: A collection of results from NIKK 2020–2022](#). Nordic Council of Ministers.



upskilling needs for the future are acknowledged (Young Håkansson, S., et al., 2022).<sup>[121]</sup>

In the Nordic Region, significantly more women than men have graduated from university (Eurostat, 2023).<sup>[122]</sup> There are also more women graduating from STEM fields in the region today, but women still make up only one-third of graduates (Nordic Co-operation, 2023).<sup>[123]</sup> This figure stands at 36 per cent worldwide (Sqalli, Z., et al., 2021).<sup>[124]</sup>

This gender imbalance at a younger age is likely to lead to occupational segregation and an increased wage gap when these women or men are older and in the workforce. Ensuring more female representation in STEM fields can help fill labour market shortages in green jobs and help achieve gender equality goals (OECD, 2023)<sup>[125]</sup> at the same time. This means action to elevate the attractiveness of green industries and green jobs equally for all students is very much needed (Lindahl, B., 2022).<sup>[126]</sup> For actions to be successful, however, an approach is required that challenges how the entire ecosystem steers genders into fields of study and sectors of work (Young Håkansson, S., et al., 2022),<sup>[127]</sup> wherein certain fields of study and certain careers are deemed 'suitable' for each gender. According to the OECD, for instance, research shows that parents are still more likely to expect their teenage sons to seek a STEM career, with these gender stereotypes being passed on to children by families, teachers, and society at large (OECD, 2023).<sup>[128]</sup>

”

***Women are perceived as being the ones who should change since they are considered to lack self-belief, networks, and experience. This is to a large degree about “fixing the women” and less about “fixing the organisations” or “fixing the knowledge”.***

ULRIKA JANSSON, FIL.DR, AND JIMMY SAND, NORDIC INFORMATION ON GENDER

Source: [Nordic Information on Gender, 2021.](#)

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121. Young Håkansson, S., Jansson, U., Sand, J., and Simonsson, A., 2022. [Towards a sustainable future world of work in the Nordic countries](#). Nordic Information on Gender.

122. Eurostat, 2023. [Population by educational attainment level, sex and age \(%\) - main indicators](#).

123. Nordic Co-operation, 2023 (6 March). [Education](#).

124. Sqalli, Z., Unnikrishna, S., Mejri, N., Dupoux, P., George, R., and Zrikem, Y., 2021 (29 October). [Why Climate Action Needs a Gender Focus](#).

125. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide](#).

126. Lindahl, B., 2022 (25 March). [Is the green transition going too fast?](#) Nordic Labour Journal.

127. Young Håkansson, S., Jansson, U., Sand, J., and Simonsson, A., 2022. [Towards a sustainable future world of work in the Nordic countries](#). Nordic Information on Gender.

128. *Supra* note. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide](#).



## FROM 'ABC TO PhD': SPARKING INTEREST IN GREEN SKILLS AND RAISING ENVIRONMENTAL AND GENDER AWARENESS IN DENMARK

To attract more students to science, a learning initiative called House of Science was established in Denmark's Sønderborg Municipality in 2009, in partnership with Universe natural science experience park and the ProjectZero business initiative. A few years later, the local utility company – Sønderborg Forsyning – youth education programmes, and the University of Southern Denmark also joined forces with the partnership.

Aligned with Sønderborg's education strategy – which has the motto 'from ABC to PhD' and places emphasis on lifelong learning – House of Science delivers educational courses and materials, developed by both teachers and students, on climate, innovation, and sustainability, which are also meant to encourage girls to consider higher education in science.

House of Science also aims to ensure more gender awareness in science teaching and offers dedicated courses to teachers trained in engineering or those who have worked with engineering in science or mathematics. The goal of this training is to strengthen awareness of how stereotypes in materials, language, and expectations can influence students' opportunities in science subjects, in terms of both participation and interest. In addition, the goal is to strengthen action competence by showing how the use of engineering didactics can reduce gender stereotyping and increase the motivation of all students.

On top of sparking children's and young people's interest in science, the partnership also has the goal of ensuring the active participation of the local community in environmental issues.

***"The benefits of raising environmental awareness go beyond encouraging eco-friendly behaviour and include helping students make study and career choices that are better aligned with the future green skills demand."***

– The OECD

Sources: OECD, [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide, 2023](#), [Global Opportunity Explorer](#), [The green transition starts at school, 2018](#), and [House of Science, Kursus: kønsbevidsthed i naturfagsundervisning, 2023](#) (available only in Danish).

## From the youngest ages: making Nordic learning green and equal

Education plays a key role in countering gender norms and unsustainable structures (Jónsson, Ó. P., et al., 2021).<sup>[129]</sup> Although the Nordic Region acknowledges the importance of education in increasing environmental awareness and resource-efficient innovation (Bruvoll, A., et al., 2012),<sup>[130]</sup> to get to a green and gender-equal future, Nordic education systems must open up options for all learners and make sure everyone leaves school prepared to fight climate change through any industry (Kwauk, C. T., and Casey, O. M., 2022).<sup>[131]</sup>

What we learn at the earliest stages can have a profound impact later in life. Experts agree: there is no link between girls' or boys' interest in science and technology and a difference in their skillset. And the younger the student, the more this is the case (UNESCO, 2017).<sup>[132]</sup> Yet, the common expectation that mathematics and science – except for biology – are where boys and men excel gives a false impression that they are somehow 'better' in these areas. And it goes both ways, with the expectation that girls are inherently better in other fields, such as caring for others. This can lead to a lack of self-confidence, in all genders, which is completely removed from abilities – and can lead to, and reinforce, gender segregation in the labour market (Jansson, U., and Sand, J., 2021).<sup>[133]</sup>

Today, education systems in the region place a strong emphasis on certain areas of sustainability, including equality, but also on environmental issues, with the possible exception of Denmark (Jónsson, Ó. P., et al., 2021).<sup>[134]</sup> Shifting the focus towards gender roles and models, as both a driver and an outcome of the green transition, should be seen as a win-win path (Janta, B., et al., 2023).<sup>[135]</sup>

## No longer optional: preparing all for the future of work

The digital and green transitions have been described as 'twin transitions' that complement one another. Green and digital skills frequently overlap, while some are

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129. Jónsson, Ó.P., Guðmundsson, B., Bergliot Øyehaug, A., Didham, R.J., Lili-Ann Wolff, L.-A., Bengtsson, S., Andreasen Lysgaard, J., Sóley Gunnarsdóttir, B., Arnadóttir, S.M., Rømoen, J., Sund, M., Cockerell, E., Plummer, P., and Brückner, M., 2021. [Mapping education for sustainability in the Nordic countries](#). University of Helsinki.
130. Bruvoll, A., Ibenholt, K. (ed.), Ahvenharju, S., Bröckl, M., Martinsen, L., and Zandersen, M., 2012. [Measuring green jobs? An evaluation of definitions and statistics for green activities](#). Nordic Council of Ministers.
131. Kwauk, C.T., and Casey, O.M., 2022 (12 February). [A green skills framework for climate action, gender empowerment, and climate justice](#). Development Policy Review.
132. UNESCO, 2017. [Cracking the code: girls' and women's education in science, technology, engineering and mathematics \(STEM\)](#).
133. Jansson, U., and Sand, J., 2021. [Genusperspektiv på framtidens högteknologiska arbetsliv \(available only in Swedish\)](#). Nordic Council of Ministers.
134. Jónsson, Ó.P., Guðmundsson, B., Bergliot Øyehaug, A., Didham, R.J., Lili-Ann Wolff, L.-A., Bengtsson, S., Andreasen Lysgaard, J., Sóley Gunnarsdóttir, B., Arnadóttir, S.M., Rømoen, J., Sund, M., Cockerell, E., Plummer, P., and Brückner, M., 2021. [Mapping education for sustainability in the Nordic countries](#). University of Helsinki.
135. Janta, B., Kritikos, E., and Clack, T., 2023. [The green transition in the labour market: how to ensure equal access to green skills across education and training systems: Analytical Report](#). European Union.

used at the same time (OECD, 2023).<sup>[136]</sup> To respond to these transitions, the entire labour market will have to ensure reskilling and upskilling. More evidence is also needed to gauge where skills gaps and mismatches are found in local labour markets to overcome bottlenecks (Alsos, K., and Dølvik, J.E. (eds.), 2021).<sup>[137]</sup>

This is also essential to ensure that men and women and gender-diverse people are equally well prepared for the shift to a greener economy (OECD, 2012).<sup>[138]</sup>

Employers estimate that four in ten workers will need to be reskilled (WEF, 2020),<sup>[139]</sup> while the ILO suggests that most upskilling and reskilling will concern mainly male workers (ILO, 2019).<sup>[140]</sup>

And the shift from brown or pollution-intensive jobs to green jobs so far seems less likely, at 4 per cent to 7 per cent (IMF, 2022).<sup>[141]</sup> For those moving from a neutral (or white) job to a green job, however, the odds are slightly better, at 9 per cent to 11 per cent. In contrast, the chance of finding a green job if your last job was also green is much higher, at around 41 per cent to 54 per cent. This doesn't mean that the mainly male workers in pollution-intensive jobs have no chance of finding greener employment, but they may need some more support (IMF, 2022).<sup>[142]</sup> Workers in brown, or highly polluting jobs, are also less likely to take advantage of training for green job opportunities (OECD, 2023).<sup>[143]</sup>

This highlights the need for equitable and inclusive green labour market and skills policies, including 'top-up' training for all mid-career workers who need to adapt to greener ways of working. To unlock emerging green employment opportunities, however, collective action – across higher education institutions, governments, social partners and enterprises – must prioritise ensuring that all students and workers alike, regardless of gender, receive the opportunities for training and reskilling in sustainability (and also in digitalisation) (Sqalli, Z., et al., 2021).<sup>[144]</sup> However, where there is a strong emphasis on employability, reskilling and upskilling, and lifelong learning needs, the need to address underlying structural barriers and enablers (such as care responsibilities) may end up being de-prioritised or ignored (Young Håkansson, S., et al., 2022).<sup>[145]</sup>

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136. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide](#).

137. Alsos, K. and Dølvik, J.E. (eds.), 2021. [The Future of Work in the Nordic Countries: Opportunities and Challenges for The Nordic Working Life Models](#). Nordic Council of Ministers.

138. OECD, 2012. [Greening jobs and skills](#).

139. WEF, 2020. [WEF Future of Jobs 2020](#).

140. ILO, 2019. [Skills for a greener future: A global view](#).

141. IMF, 2022. [World Economic Outlook April 2022: War Sets Back The Global Recovery – April 2022](#).

142. [World economic outlook – April 2022](#).

143. OECD, 2023. [Job Creation and Local Economic Development 2023: Bridging the Great Green Divide](#).

144. Sqalli, Z., Unnikrishna, S., Mejri, N., Dupoux, P., George, R., and Zrikem, Y., 2021 (29 October). [Why Climate Action Needs a Gender Focus](#).

145. Young Håkansson, S., Jansson, U., Sand, J., and Simonsson, A., 2022. [Towards a sustainable future world of work in the Nordic countries](#). Nordic Information on Gender.

## TRANSITION FLEXIBILITY, ADAPTABILITY, AND SECURITY FOR SWEDISH WORKERS

As a response to labour market transformations, including the green shift, in 2022, the Swedish Government put in place a transition package to improve long-term flexibility, adaptability, and security in the labour market, based on a proposal from trade unions and private sector employers. This package includes a reformed labour law, a new student financing scheme, and new basic transition and skills support.

The scheme offers advice and guidance to facilitate the transition and switch to new jobs or training, including for those whose employment contract is about to expire or be terminated. A key feature of the package is the right to access to training. The financing scheme for transitioning and retraining gives financial support to those in work so they can take shorter or longer training courses to develop their skills. This will facilitate job-to-job transition, improve workers' skills and job security, and promote lifelong learning. For most, the career transition assistance support will cover at least 80 per cent of the loss of income through loans and grants.

This package leaves companies and enterprises in a good position, too: they benefit in terms of a more productive, more skilled workforce, and it is possible for employers who finance transition and skills support to receive compensation.

***"Guaranteeing a just transition is becoming an existential issue for many of our industries. Skills gaps and labour shortages are the Achilles' heel of Europe's Green Deal. The scale of upskilling and reskilling needed to meet our climate and digital ambitions is equivalent to an industrial revolution of its own. This must be anticipated and managed to ensure smooth transitions for workers and their communities."***

– Judith Kirton-Darling, Deputy General Secretary of industriAll Europe

Sources: [Ministry of Employment and Ministry of Education and Research, Flexibility, adaptability and security, 2023](#), and [industriAll Europe, Sweden: Ground-breaking agreements on education support to enable a Just Transition, 2022](#).

## SUGGESTIONS: GREEN SKILLS FOR A SUSTAINABLE AND GENDER-EQUAL NORDIC FUTURE

- **Build the knowledge base on skills needs, gaps, and mismatches in local contexts** to accelerate the attainment of green and socially sustainable goals. This could include working with sub-national and local governments to help officials design policies tailored to local needs.
- **Ensure targeted actions to attract (and retain) more talent** – including female talent – to STEM fields and male talent to care and education jobs, especially where negative gender stereotypes have the greatest impact on study and career choices. This could include campaigns, mentoring programmes, academic and industrial research scholarships, and exchange and networking opportunities between students, researchers, and professionals within these fields.
- **Harness inclusive and effective social dialogue to put in place reskilling, upskilling, training programmes and transition packages led by governments and social partners** and backed by adequate financing and new or updated collective bargaining agreements, which make lifelong learning and adaptability a tangible option for workers. This could include reviewing educational curricula to reflect skills demand shifts, putting in place tailored training offers in sectors and areas deemed most in need, and ensuring that policymakers support and incentivise businesses and employers to help workers acquire the skills needed for the green transition.



Photos: Cecilia Larsson Lantz/Image Bank Sweden, Karl Melander/Image Bank Sweden, Tina Axelsson/Image Bank Sweden

# WHY GREEN JOBS WILL TAKE US ONLY SO FAR: CHANGING GENDERED ROLES, BEHAVIOURS, AND HABITS

## THE AMBITION: A GREEN NORDIC REGION

*"The Nordic Council of Ministers will make it much easier and more attractive for Nordic consumers to prioritise healthy and environmentally and climate-friendly choices, with a joint investment in sustainable consumption."*

### This means that we will:

Help to facilitate and accelerate the normalisation of sustainable lifestyles in the Nordic Region. This will be achieved by way of interdisciplinary efforts relating to sustainable lifestyles, focusing on knowledgebases, policy development, and communication on behavioural and cultural change. (Objective 4)

Source: [Nordic Council of Ministers, 2021](#).

Although green jobs are on the up in the Nordic Region, paid employment is only a part of the green transition puzzle. The way we interact with the environment and how we consume and care are equally – if not more – important to counter climate change. In other words, we need a range of greening skills to make a difference.



Analyses of environmental effects in the region show that, despite significant progress made in 'decarbonising' energy systems, global emissions continue to grow because of the way we travel, how we eat and manage food, and our housing (Fråne, A., et al., 2021).<sup>[146]</sup> Yet, the policymakers and decisionmakers concerned with the climate are economists and engineers most often trained to focus on costs and technical solutions rather than social concerns and consequences (Lander Svendsen, N., et al., 2022).<sup>[147]</sup> Today, as most of the unpaid work in households still rests on the shoulders of women in the Nordic countries, so does the responsibility of managing a green and energy-efficient household and having a low-carbon lifestyle (Lander Svendsen, N., et al., 2022).<sup>[148]</sup> But everyone is needed in order to reach our goals.

## Of equal value? Paid and unpaid green work

Care values and the responsibility for unpaid care and household work are a key to the green transition. This unpaid care burden, despite the improvements in the Nordic Region, still relies heavily on women, which has also led to occupational gender segregation and a gender pay gap, as women need more flexibility to take care of households as well (Sand, J., 2022).<sup>[149]</sup>

As paid green jobs are more likely to be taken up by men, unpaid jobs that green the home will most often be taken up by women (Young Håkansson, S., et al., 2022).<sup>[150]</sup> The challenge remains to ensure that paid and unpaid work – or care jobs at home – are both highly valued, and that all genders play their part in the economy and in behavioural change.

## Changing behaviours: everyone's responsibility

To meet our goals, behavioural change and an embrace technological development are prerequisites (Sand, J., 2023).<sup>[151]</sup> And this requires action across all genders. Almost three in four people in the Nordic Region agree that climate change is a serious or very serious problem, with women being more in agreement (79 per cent) than men (64 per cent) (Tapia, C., et al., 2023).<sup>[152]</sup>

Nordic women also appear more engaged in both climate change and social issues

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at large. Young people in general appear more concerned with the state of the climate, while young women appear to step up more in climate activism. Climate deniers in the Nordic Region tend to be older men, often employed in or have a background in traditionally male industries (Sand, J., 2022).<sup>[153]</sup> Those in highly polluting, or brown, jobs, also tend to believe that climate change is less of a serious problem than those in other industries (Tapia, C., et al., 2023).<sup>[154]</sup>

When it comes to consumption and other behaviours – particularly in food and transport – men as a group have a higher carbon footprint than women when looked at as a group (Sand, J., 2022).<sup>[155]</sup> Yet, men are also those most likely to show interest in finding technologically driven solutions at home, whereas recycling and buying second-hand, for instance, which can be more time-consuming, are tasks often given to women (Sand, J., 2023).<sup>[156]</sup> This means that interventions that challenge these gender norms – where care is associated with femininity and technology with masculinity – are needed, so that more women get involved in technology to improve climate impact, and green tasks around the house, beyond technological solutions, become an area of more interest to men (Sand, J., 2022).<sup>[157]</sup>

Although more studies are needed on how aspects of gender interplay with the world of paid work, as well as behaviours within households, in order to improve climate policy in the Nordic Region (Sand, J., 2023),<sup>[158]</sup> there is reason for optimism. A study from Norway, the world's largest market for electrical vehicles, shows that women are becoming equally interested in moving towards technology and away from fossil-fuelled cars, an area traditionally seen as masculine (Anfinsen, M., et al., 2019).<sup>[159]</sup> And those men who spend more of their time doing unpaid care and domestic work – an ideal often associated with femininity – are more engaged with sustainability and show more sustainable behaviour than other men (Sand, J., 2022).<sup>[160]</sup>

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## SUGGESTIONS: CHANGING GENDERED ROLES, BEHAVIOURS, AND HABITS

- **Ensure sex-disaggregated data is available and that country reporting is in place on energy consumption and behaviour**, as well as on the intersection of gender, income, demography, age and how these may affect energy choices. This could include determining good practices and helping make the case for whole-of-society behavioural change.
- **Harness the opportunity for green transition to challenge gender stereotypes in the Nordic Region**, which associate technology and the public sphere with masculinity and care and the private sphere with femininity, to attain social, economic, and ecological sustainability.

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