Työterveyslaitos | Arbetshälsoinstitutet
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A SURVEY OF THE VIEWS OF FINNISH EMPLOYEES

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TYÖTERVEYSLAITOS
HELSINKI

Finnish Institute of Occupational Health

P.O. Box 40

FI-00032 Työterveyslaitos

www.ttl.fi/en

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Abstract

The aim of the Climate Change and Work survey conducted by the Finnish Institute of Occupational Health in cooperation with Statistics Finland was to increase understanding of climate actions at Finnish workplaces, employees' climate attitudes and actions, and views on the effects of climate change on working life. The survey was the first representative study of the entire wage-earning population on the topic carried out in Finland. 1,917 employees from all sectors of the economy responded to the survey.

Employees in Finland have a largely shared view that the earth's climate is changing, while their views on how actively they themselves should act to mitigate climate change vary more. However, many of the respondents stated that they were motivated to change their own working methods, to present ideas for increasing ecological sustainability in their own work and to learn more about ways to mitigate climate change.

Workplaces and industries differ greatly in their activity to implement measures to mitigate climate change and promote the green transition. However, there are also many respondents in all industries who cannot take a stand on the climate measures of their workplace. This suggests that in many workplaces the questions have so far not been integrated as part of the strategy, or the strategy has not been communicated effectively throughout the entire organization. There is also relatively little training on climate change mitigation or the green transition.

Employees do not believe that climate change will have dramatic labour market effects. Very few report that they are worried that climate change would lead to the loss of their own job. On the other hand, more employees than this believe that climate change could create more jobs in their own field. Especially many of the most highly educated employees believe that new and interesting job opportunities will arise for themselves in this way.

The overall picture provided by the survey of the effects of climate change and the progress of the green transition in Finnish workplaces is based on the views of employees. In the future, it will be important to supplement the picture with a similar type of information collected from employers' representatives, as well as with more targeted studies paying more attention to special features of individual industries or professional groups.

Tiivistelmä

Työterveyslaitoksen yhdessä Tilastokeskuksen kanssa toteuttaman Ilmastonmuutos ja työ -kyselyn tavoitteena oli lisätä ymmärrystä suomalaisten työpaikkojen ilmastotoimista, työntekijöiden ilmastoasenteista ja -toimijuudesta sekä näkemyksistä koskien ilmastonmuutoksen vaikutuksia työelämässä. Kysely oli ensimmäinen Suomessa toteutettu aihetta käsittelevä tutkimus, joka kohdistui edustavasti koko palkansaajaväestöön. Kyselyyn vastasi 1917 työntekijää kaikilta toimialoilta.

Työntekijöillä on Suomessa pitkälti jaettu näkemys siitä, että maapallon ilmasto on muuttumassa. Näkemykset siitä, kuinka aktiivisesti heidän itse tulisi toimia ilmastonmuutoksen hillitsemiseksi, vaihtelevat enemmän. Monet vastaajista ilmoittivat olevansa kuitenkin motivoituneita muuttamaan omia työtapojaan ja -menetelmiään, esittämään ideoita ekologisen kestävyyden lisäämiseksi omassa työssään sekä oppimaan lisää tavoista hillitä ilmastonmuutosta.

Työpaikat ja toimialat eroavat suuresti aktiivisuudessaan toteuttaa ilmastonmuutosta hillitseviä ja vihreää siirtymistä edistäviä toimia. Kaikkien toimialojen vastaajissa on kuitenkin myös paljon niitä, jotka eivät osaa ottaa kantaa työpaikkansa ilmastotoimiin. Tämä viittaa siihen, että monella työpaikalla kysymykset eivät ole toistaiseksi olleet vahvasti integroituneita osaksi strategiaa tai strategiaa ei ole kommunikoitu tehokkaasti läpi koko organisaation. Myös ilmastonmuutoksen hillintää tai vihreää siirtymää käsittelevä koulutus on suhteellisen vähäistä.

Työntekijät eivät usko ilmastonmuutoksella olevan dramaattisia työmarkkinavaikutuksia. Hyvin harva ilmoittaa olevansa huolestunut siitä, että ilmastonmuutos johtaisi oman työn menettämiseen. Sen sijaan tätä useammat uskovat, että ilmastonmuutoksen myötä voisi omalle alalle syntyä lisää työpaikkoja. Varsinkin monet korkeimmin koulutetuista työntekijöistä uskovat näin syntyvän myös itselle uusia ja kiinnostavia työmahdollisuuksia.

Kyselyn antama kuva ilmastonmuutoksen vaikutuksista ja vihreän siirtymän etenemisestä suomalaisilla työpaikoilla perustuu työntekijöiden näkemyksiin. Kuvaa on jatkossa tarpeellista täydentää vastaavantyyppisellä työnantajien edustajilta kerättävällä tiedolla samoin kuin kohdennetummilla yksittäisten toimialojen tai ammattiryhmien erityispiirteitä luotaavilla tutkimuksilla.

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1 Introduction

Climate change and biodiversity loss are among the greatest challenges of our time, forcing us to seriously question our current lifestyles and urging us to adopt more sustainable means of producing and living. A key driver of climate change and biodiversity loss is the current fossil fuel-based and material-intensive model of economic growth that has led to overconsumption of natural resources (Dasgupta 2021; IPCC 2022). The threat of eco-crisis must be tackled at the global and local levels, by societies and individuals alike. In this sustainability transition, one important place of action is the workplace, but how has work life been affected by climate change and the green transition? In this report, we examine how Finnish workplaces promote climate change mitigation and the green transition by examining employees' experiences.

Information about climate change and environmental degradation has gradually led to policy action, both globally and at the national level in Finland. Climate change mitigation refers to active measures to reduce greenhouse gas emissions, for example by introducing new energy technologies and renewable raw materials, or by increasing carbon sinks. In the European Union, the direction of the sustainability transition is guided by the Green Deal programme (European Commission 2019) and the 'Fit for 55' Climate Change Act (EU2021/1119). To mitigate climate change, the European Union aims to achieve carbon neutrality by 2050. Finland's target is more ambitious. The policy objectives are to halt biodiversity loss by 2030 and achieve carbon neutrality by 2035. These goals have been accelerated and supported by government programmes, legislation and various development programmes (such as the Climate Change Act 432/2022, Carbon-neutral Finland 2035 and similar programmes).

Overall, climate change and mitigation measures are expected to have a significant impact on the labour market, occupations, job contents and skills (Cedefop 2021; Eurofound 2023; ILO 2015, 2019; Kuusi et al. 2021). However, the impacts of climate change affect different industries in different ways. While the fossil-intensive economic sectors that emit the most greenhouse gases are shrinking, new sources of growth and jobs are being created in areas such as renewable energy, bioeconomy and the circular economy. The change will affect all sectors in one form or another, as almost all work is expected to become greener and to require new skills (Eurofound 2023). In recent years, interest in environmental sustainability issues and climate impacts has expanded to an increasing number of sectors, such as the health and social services sector (Pulkki et al. 2023; Ranta-Tyrkkö et al. 2023).

The most significant questions in terms of climate change mitigation are related to the energy, transport and land use sectors. Sectoral low-carbon roadmaps have been

formulated in Finland (Paloneva & Takamäki 2020). Development and policy measures have especially focused on those sectors and processes that consume a lot of energy and resources, and where innovations and new operating practices for the green economy are urgently needed. Key sectors include, for example, energy production, manufacturing, construction, transport and logistics, and agriculture.

Due to the systemic and holistic nature of climate change, joint action by all parties in work life (including political decision-makers, labour unions and industry associations, companies and other organizations and their personnel) is needed to find and promote sustainable and fair solutions. In this report, we particularly focus on how workplace sustainability measures are experienced by employees.

The strategic choices of companies and other work organizations play an important role in climate change mitigation. The green transition requires rethinking business models, management practices, service and production chains, work processes, tasks and workspaces. The transition is reflected in concrete changes and new competence requirements in workplaces. However, for these changes to succeed, it is also important to understand employees' attitudes to change, their concerns and aspirations, as well as their own actions in the green workplace transition.

In addition to climate change mitigation measures, climate change itself and various adaptation measures have an impact on work life. The direct effects of climate change, including heat waves and various extreme weather phenomena, affect working conditions and pose new occupational health and safety risks. Preparedness and adaptation to climate change can mean, for example, changes in working hours and ways of performing work, especially outdoor work. However, it is important to acknowledge the need for climate change adaptation in indoor work, too, where increased heat may increase the need for various cooling solutions. In addition, increasing concern and anxiety about climate change poses a risk to work ability, and employees' concerns about the future may be reflected in expectations regarding work and employers. (Ala-Laurinaho et al. 2020).

Despite these large anticipated changes in work life, employees' views on climate change and adapting to it and mitigating it in work life have received little academic attention in Finland. Previous studies carried out in Finland have mainly examined climate change and the green transition only as an external change influencing work life from the outside. The Finnish Environment Institute has studied acceptance of climate policy among the working population (Huttunen et al. 2022). The impacts of climate change, climate change mitigation and climate change adaptation on the Finnish economy have also been studied (EK 2020; Valkonen et al. 2023). Similarly, an

interest in "green competences" in work life has increased in recent years (Kuusela et al. 2023). All in all, the number of studies examining the connections between the economy, work life, the green transition and climate change has increased in recent years in Finland.

Advancing the green transition requires work organizations to change their operating methods. The green transition and the principles of sustainability can guide organizations as they overhaul their products and services and implement changes in their internal practices. Employees' agency and interest in working in a more environmentally sustainable way can be important drivers of change at the work organization or work community level. Of the Finnish trade unions, Akava (2019) and SAK (2019) have conducted surveys on their members' views on climate change. However, information on how climate change and the green transition affect the entire wage earner population is needed. Research and foresight play a key role in preparing for the multiple impacts of climate change on work life and in securing a just green transition for all.

To meet knowledge needs, the Finnish Institute of Occupational Health initiated the Climate Change and Work project in 2020 with the aim of developing indicators to monitor the effects of climate change on work life. The purpose of the Climate Change and Work survey, carried out by the Finnish Institute of Occupational Health together with Statistics Finland, was to find out how the above-described changes and measures related to climate change mitigation and adaptation are experienced by wage earners in workplaces. The aim was to assess to what extent climate change mitigation has been included in the strategies and plans of work organizations, how new green skills have been developed, and whether sustainable working practices have been introduced in the workplace. The focus of the survey was climate change mitigation measures, but it also included questions related to working conditions and climate change adaptation measures from the perspective of occupational safety and health. In this report, we focus on employees' views on climate change, their own climate actions, and their experiences of changes in the workplace related to the green transition.

In the first chapter of the report, we describe the development of the survey and introduce the selected themes (Section 1.1) and the respondent group (Section 1.2). In Chapter 2, we present the respondents' views on climate change, their climate concerns and general expectations related to a sustainable future. In Chapter 3, we focus on the workplace: How are the respondents' workplaces approaching climate change mitigation and ecological sustainability, and what concrete climate actions have been taken in their workplace? In Chapter 4, we examine the development of skills related to

climate change. After this, we describe what the respondents think about the climate impacts of their work and what kinds of climate actions they have taken in their work (Chapter 5). In Chapter 6, we take a broader look at the potential labour market impacts of climate change and the green transition, and how respondents perceive these impacts. At the end of the report (Chapter 7), we summarise our conclusions from the survey findings and suggest avenues for further research.

1.1 Survey planning and data collection

1.1.1 Previous research

There are no established survey measures for issues related to climate change and the green transition, although surveys are commonly used in research on work life and employees' opinions. Employee surveys have long been used to investigate employees' experiences of working conditions, such as views on the sense of community or orientation toward development (see, for example, Sutela et al. 2019). There is a need for survey data that generalises employee views when responding to climate change and ecological sustainability crises, as information on employees' experiences helps develop an understanding of the changes brought by the green transition at work. In addition, taking employees' views into account can contribute to the social acceptability of decision-making related to climate change (see e.g. Friedrich et al. 2021). New knowledge and knowledge production processes are needed to solve ecological sustainability crises, since they cannot be solved based on previous information alone (e.g. Fazey et al. 2020).

The research project started with the researchers familiarising ourselves with previous studies and reports (see previous section). Based on our examination of previous studies carried out in Finland, it seems climate change and the green transition have mainly been examined as an external change influencing work life from the outside. However, in addition to the changes in the external environment of work organizations, the implementation of the green transition also requires change to the practices and methods of the work organizations. In addition, employees' agency and interest in engaging in more environmentally sustainable ways of working can be local drivers of change which hasten the green transition.

Employees' and organizations' actions related to climate change, the green transition and environmental responsibility have been examined in research areas such as environmental management, organization studies, corporate responsibility and green human resources. Studies in these fields have used surveys as a data collection method.

However, Scopus and Web of Science databases and Google searches carried out in English and Finnish in the early stages of this project did not return results of surveys that targeted employees in all fields of work, which was the objective of this project. However, previous survey studies were useful as we designed the survey for this research project.

Corporate social responsibility (CSR) refers to voluntary activities carried out by companies and organizations to benefit society. Issues related to climate change and biodiversity loss have often been examined under the framework of corporate responsibility. However, employees' views and roles are not always studied or seen as part of corporate responsibility and its implementation (Onkila & Sarna 2022), while single studies examining employees in the context of CSR have been conducted outside Finland (e.g. Graves &; Sarkis 2018; Hameed et al. 2016; Hur et al. 2019; Pérez et al. 2018). In the context of CSR, previous surveys have focused on specific organizations or industries, the datasets have been relatively small, and the surveys have not been designed for the entire wage earner population. In addition, climate change and the green transition will bring about changes in work life that are also related to issues outside the scope of corporate responsibility (such as employees' skills). As a consequence, the CSR research literature was seen as limited in terms of this project's interests.

The field of environmental management has also revolved around studies of businesses and their activities. As the name suggests, this field views environmental issues from the perspective of management and administration and examines the operating methods of organizations. Some scholars in the field have posited that successful environmental management requires the participation of all the stakeholders in a company, including employees (Daily & Huang 2001; Reed 2008). However, we did not find any surveys on topics combining employees and environmental management aimed at the entire working population.

The environmental actions of individuals have been studied within the literature discussing employees' pro-environmental behaviour or green behaviour. Research on pro-environmental behaviours at work has been conducted in the fields of psychology, human resource management and organizational research. Surveys are a common method of conducting research on the topic, but the data collected in the field are also organization- or industry-specific and do not represent the entire working population of a country. Research on employees' green behaviours has mainly focused on building new measurement indicators (Francoeur et al. 2021; Wiernik et al. 2016). The literature on environmental work behaviours was utilised for this study, especially in those survey

sections describing environmental activities that could be conducted in every job regardless of the field (such as presentation of ideas). Previous research findings in the field suggest that employees may want to develop their work to make it more environmentally sustainable, for example by changing their work practices or by participating in joint development in the organization.

In addition to the above-mentioned survey research, the European Public Service Union (EPSU), for example, has asked its members about their knowledge of circular economy-related occupational risks and associated protection measures (EPSU 2020). Single surveys have also been conducted by consultants and think tanks (Kite Insight 2022; Polman 2023). Kite Insight's survey collected data from employees in eight different countries. The results show, among other things, that 70 per cent of respondents felt that implementing climate action at work affects motivation and well-being. Similarly, 70% of respondents said they were interested in training related to climate change. (Kite Insight 2022). The goal of the Kite Insight survey was similar to that of this project, in that data were collected from employees in different industries. However, its findings were published after the survey data for this project were collected.

In Finland, citizens' attitudes and views on climate change have been surveyed by the Finnish Innovation Fund Sitra (2019), for example, and the Steering Group for Climate Communications (Ilmastobarometri 2023). Attitudes and environmentally responsible actions have also been studied as part of European surveys such as the European Social Survey and the Eurobarometer (e.g. Eurobarometer 2023; Pohjolainen et al. 2018).

The advantage of survey research is that it is a relatively easy means of collecting data from a large group of respondents. Weighted survey data results describe the views of the whole population group, which can further help create a larger-scale understanding of the phenomenon at hand. It has been found that climate change and the green transition are changing the economy and society on many levels. Surveys targeting the entire working population can help us understand how societal sustainability visions are being realised in work life (or if they are not). While we worked on our project, Eurofound (2023) also identified a need for systematic data collection methods on climate change related topics.

1.1.2 Climate Change and Work survey

The Climate Change and Work survey was developed during 2021 as part of the Climate Change and Work research project. All members of the research project participated in the development of the survey form. The final survey form (see

Appendix) consists of 118 questions or statements in total, with three open-ended questions at the end of the survey. The motivation for gathering such survey data, the survey development process and the survey indicators developed are described in more detail in a research article by Moilanen and Toikka (2023).

The climate change views of wage earners were measured using five attitude measures which were also used in the Eurobarometer (Eurobarometer 2023). An individual's attitude to climate change is assumed to be associated with the experience of feeling personal responsibility to act in more climate-friendly ways. The questions from the Eurobarometer were also selected due to a desire to include already validated questions in the survey.

Seven workplace sustainability statements, measured with a Likert scale, aimed to assess employees' views on whether their work organization is sustainable from an environmental and climate perspective. The items assessed the perceived sustainability of energy and materials usage at the workplace, for instance, and whether the work organization communicates with its employees regarding means of mitigating climate change. Climate communication directed at employees is a means to make organizational action visible, even though the actions may not influence employees.

Work organizations can engage in various climate actions to promote sustainability. The survey included questions on ten different climate actions work organizations can implement. Previous research has noted that experiments (see e.g. Davidson et al. 2023) and co-creation (Itten et al. 2021) are means of providing solutions to local sustainability challenges. However, the frequency of such actions in the workplace context has not been researched. The aim of these questions was to investigate how widespread such actions are and how familiar employees are with them. Employees' experiences of their work organization can also provide an indication of its orientation (or lack thereof) toward the green transition.

Survey items included questions on respondents' perceptions of their employer's attitudes. The goal of three items was to assess employers' stances on climate change and whether employers engage in climate change mitigation activities. Previous research has shown that employers' actions have an exemplary role for employees in terms of environmentally responsible behaviours (Wesselink et al. 2017).

Climate change and ecological sustainability can be considered in working environments and their design. Working environments can, for instance, guide employees toward environmentally responsible behaviours. Organizations can also try

to minimise the environmental burden resulting from their operations by using recycled furniture or by renting the machines or tools they use.

The development of skills has been acknowledged as an important driver of the green transition. However, it is still unclear what opportunities for environmental training are available in work life. Training and guidance are concrete examples of how organizations try to develop their employees' skills. Some survey items related to general sustainability skills, such as energy saving and materials use at work.

Employees' interest in learning and taking part in efforts by the organization to develop in a sustainable direction is an important local driver in sustainability transitions, but there is no information on the prevalence of such interest. One goal of the environmental action survey topic was to find out how common sustainability-related employee initiatives are and how interested they are in this topic.

The survey included three items on climate change-related worries and opportunities. Climate change-related loss of livelihood opportunities and job losses in certain sectors and regions have been widely reported. One aim of our survey was to find out how widespread the fear of job loss is. At the same time, it was considered that the potential harm caused to the climate and environment by their work may be an issue employees are worried about. Particular career stories have been in the media spotlight, illustrating shifts towards environmentally responsible jobs (see e.g. BBC 2023; Yle 2022). However, data on the prevalence of this phenomenon, such as information about the number of people experiencing conflict between their job and their environmental values, is lacking.

Mitigating and adapting to climate change causes structural reforms in the economy and raises concerns, but the green transition can also bring new job opportunities. The personal benefits of the green transition, such as new jobs or opportunities to advance in one's career, can strengthen the acceptability of green transition policy measures among employees. However, in the transition period, the realization of the benefits is still uncertain, and more understanding of what the new job opportunities can mean in one's profession is required.

Some occupational health and safety risks are becoming more common as a consequence of climate change and the green transition. It is important that employees, especially those at risk, are aware of the risks that are becoming more common. The survey included questions on eight emerging occupational health and safety risks. Since some of the risks were identified as sector-specific issues, employees were also given the option to respond "Not relevant in my job".

Extreme weather conditions are becoming more widespread due to climate change. Periods of elevated heat and working in hot conditions are becoming more common, and as climate change is associated with increased occupational health and safety risks it will affect many wage earners. The aim of nine survey items was to assess the level of workplace adaptation to work in hot conditions and employees' awareness of the adaptation guidance. Adapting to work in hot conditions requires new ways of taking breaks during the workday and utilisation of cooling measures (such as fans and cool spaces), among other things.

Commuting to work, particularly in a private car, increases the overall emissions from mobility. Geography and workplaces being located away from public transport networks limits the use of different means of mobility. The aim of three survey items was to assess the most common means of work-related mobility and the length of travel from home to the workplace. In addition, the survey included questions on different ways organizations can develop and promote the adoption of more environmentally sustainable means of commuting.

The last part of the survey included questions about values and attitudes toward sustainability. Values and attitudes have previously been found to be associated with environmentally responsible behaviour. They may also be associated with workplace perceptions, although there has been less research on this. Moreover, values and attitudes influence wage earners' views on work life and the future, and can provide information on changes in the climate of opinion.

1.1.3 Limitations of the survey

Survey research has limitations and issues related to reliability. Some reliability concerns are common in survey research in general. Our survey was developed during the year 2021, since when knowledge and understanding of the topic has increased remarkably. The survey form is a result of certain time and space, and a similar survey created by another research group in or outside Finland would probably have resulted in a different outcome. However, multiple stakeholder meetings held during the project provided confirmation of our belief that climate change and the green transition are topics on which employees' opinions should be surveyed. This belief was strengthened by the knowledge production needs noted by other parties, such as Eurofound (2023). Based on extensive data collection from previous research as well as stakeholder collaboration during the project, the Climate Change and Work survey developed by the Finnish Institute of Occupational Health provides a good starting point for future survey research efforts on this topic.

We recognised from the early phases of the project that the relative importance of issues related to climate change and the green transition are partly dependent on the sector of work. For example, the key issue in the field of engineering has been the production of new technological solutions which cut emissions, whereas in the field of education, the green transition impacts work by introducing new content to work tasks, such as climate change education. A goal of our survey was to formulate questions that would be relevant to wage earners regardless of the sector. In the survey feedback, individual respondents shared their views on the questions they found challenging, allowing us to understand in which fields of work responding was considered difficult. The expected challenges of the new survey were acknowledged in advance, and the survey form was tested using both quantitative and qualitative means before the final data collection.

The survey data are based on self-assessment by employees. Respondents may not have had knowledge of all the measured items (such as workplace climate targets). However, a workplace could have climate targets which the employee was not aware of. The form of knowledge production is important to keep in mind when analysing and viewing the survey results. At the same time, employees' potential lack of knowledge on the issues being surveyed was discussed before data collection, and it was considered that lack of knowledge may also be associated with employees not being influenced by the measured item. The analysis of the survey data raised questions on the extent to which organizations communicate with their employees on the climate actions they implement, and how important they regard employees when it comes to implementing climate action. These topics require further research.

The survey gathered cross-sectional data on Finnish work life and the data describe employees' experiences between March and June 2022. Cross-sectional data cannot be used to assess a cause-effect relationship. For example, respondents reporting that they received training does not mean it had an impact, or that work became more climate friendly because of the training. However, the aim of the research was not to evaluate the effects but to develop a new work life survey. The target is to repeat the survey data collection with an improved survey form in 2025. Learning experiences gained from this survey and data analysis may lead to the removal of ineffective questions, the rewriting of certain survey questions or the development of completely new questions. Future data will enable us to investigate developments in work life with regard to climate change and the green transition from 2022-2025.

1.2 Survey respondents

The Climate Change and Work survey received responses from 1917 wage earners between 11 March and 23 June 2022. All the respondents were wage earners at the time of sampling according to the latest wage earner register data (spring 2019) from Statistics Finland. The wage earner register was used for sampling in early 2022. The primary data collection means was a web-based survey, but respondents were also given the option of completing the survey in paper format.

We knew before the data collection phase that due to delays in the register data and labour market transitions, all respondents in the sample would not necessarily be wage earners at the time of data collection. Despite the potential transitions, wage earner register data were perceived as the most efficient means of reaching the target population of the study. 84 per cent of the final survey respondents were wage earners at the time of data collection. Five per cent of respondents were students and four per cent had retired. Two per cent were on parental leave and two percent were unemployed or had recently been laid off. A few respondents said they were working as farmers or on a family farm, or described their labour market status as something else. The results are based on the whole population of respondents, as the instructions advised respondents to answer based on their last job if they were not employed when they completed the questionnaire.

Figure 1-1 illustrates the gender distribution of the survey respondents. A slightly higher proportion of respondents were women. Around one percent did not want to specify their gender or marked their gender as 'other'.

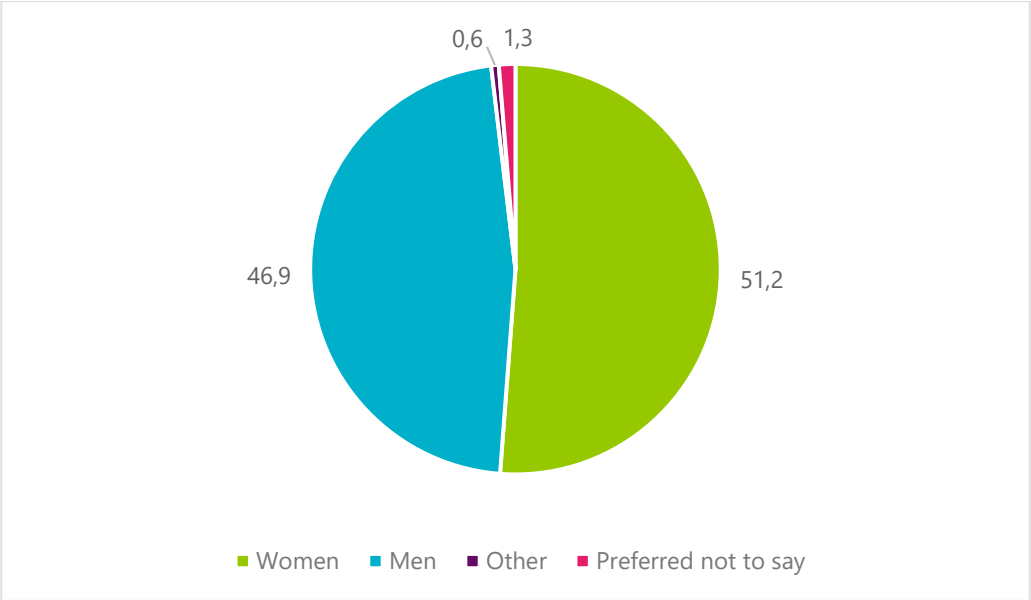

Figure 1-1 Gender distribution of the respondents.

Figure 1-2 illustrates the age distribution of the respondents, which was between 20 and 68 years. 40-49-year-old employees formed the largest respondent group. Due to delays in the wage earner register, the data sample did not include people who were less than 20 years old at the time of the survey, even though the target population was the entire adult population. Respondents were categorised into age groups based on their response to an initial survey question about their birth year.

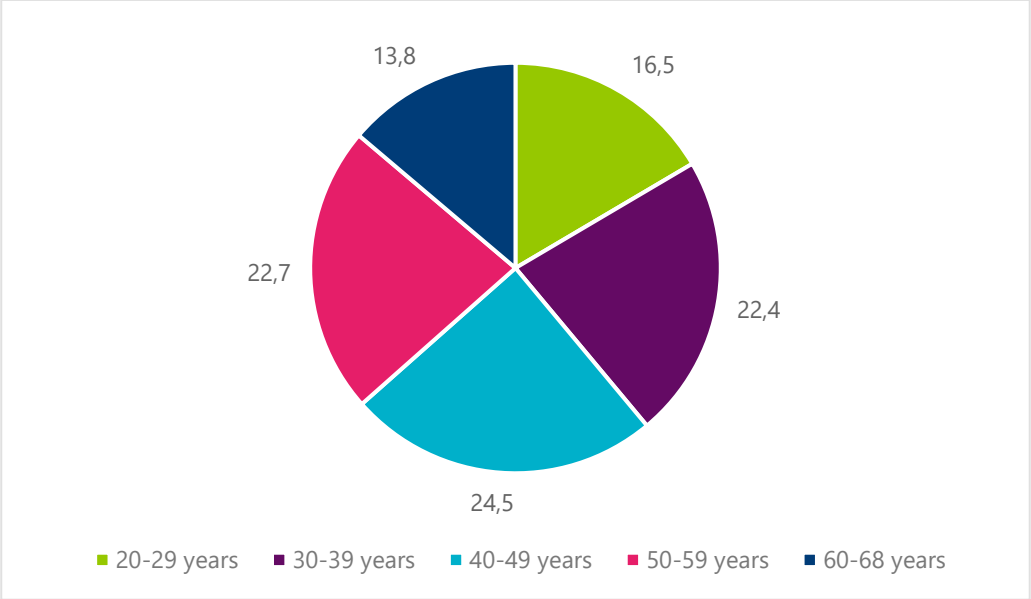

Figure 1-2 Age group distribution of the respondents.

The highest education qualification reported by the respondents is illustrated in Figure 1-3. The largest group (40%) consisted of respondents with a bachelor's degree, specialist vocational qualification or other secondary level degree. A third of the respondents reported that their highest education qualification was a vocational degree, high school diploma, basic education or equivalent. About a quarter of respondents reported having a master's, licentiate or doctoral degree. The education level categorisation used in the analysis, as shown in Figure 1-3, is based on the original 10 response options of the questionnaire.

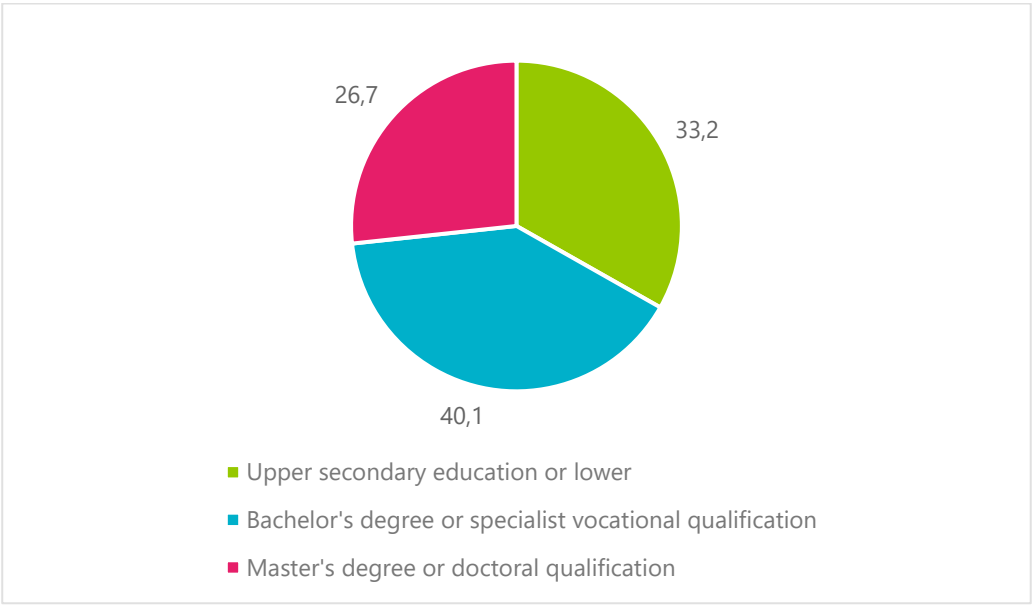

Figure 1-3 Education level distribution of the respondents.

The respondents were grouped by work sector according to the products or services offered by their employer. Figure 1-4 shows the field of work reported by respondents. The largest groups of survey respondents worked in manufacturing, construction, energy, HVAC or maintenance (25.2%) and the social and health services and well-being sector (22.5%). Other large respondent groups included those working in information technology, business services, and finance and insurance services (12%), retail, accommodation, restaurants and catering, and private services (11%) and education and research (10.4%). During the data analysis the original 17 industry categories of the survey were reclassified into eight groups for this report. The "other" industry group in the data analysis included respondents working in culture, entertainment, the arts or other industries self-defined by the respondent as not belonging to any of the predefined response options on the questionnaire.

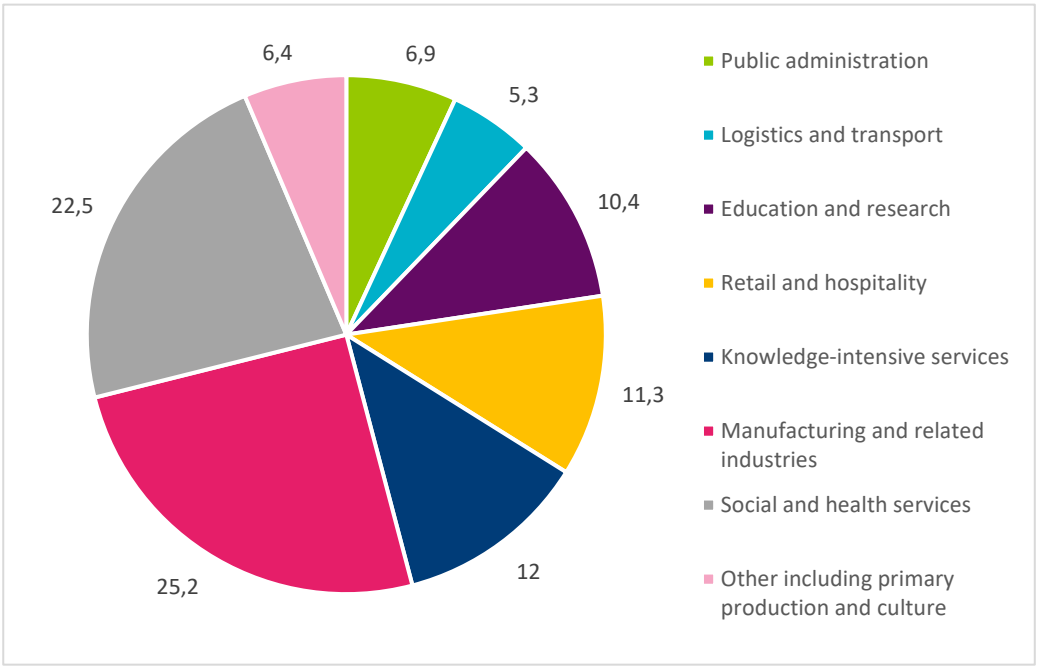

Figure 1-4 Distribution of work sector of respondents.

In the figures, abbreviations are used for the categories describing the field of work. Respondents working in the manufacturing, construction, energy, HVAC and maintenance sectors are later referred to as those in "manufacturing and related industries". Respondents working in the IT, business services and financial and insurance sectors will later be referred to as those in "knowledge-intensive services". The group of respondents in the retail, restaurants, catering and private services sectors

will later be referred to as those in "retail and hospitality". Employees working in the health and social care and well-being sectors are later referred to as those in “social and health services”.

The survey also included questions on general features of work and working conditions. 86% of the respondents said they work in a permanent employment relationship. Approximately one in six respondents worked in a supervisory position. More than half of the respondents worked in a private company. One third of the respondents worked in the public sector (state, municipality or joint municipal authority). The largest group of respondents (34%) worked in an organization of 10–49 people. Approximately one in four respondents live in the Helsinki Metropolitan Area. 21% say they live in the city centre or suburb of a city with more than 100,000 inhabitants. One in four respondents reported living in a city centre or suburb with fewer than 100,000 inhabitants. 13 per cent of the respondents live in a village or rural community, and the rest live in rural or other sparsely populated areas.

1.3 Reporting of survey results

In the analysis chapters of the report the results are illustrated with cross-tabulations of survey items and background variables (field of work, gender, age and level of education). For gender differences, differences between women and men are reported. When reporting differences by field of work, the group "others" is excluded from the results. In most cases, respondents answering “yes”, “strongly agree” or “somewhat agree” are reported in the text.

2 Opinions about climate change and a sustainable future

Questions on opinions and values provide information about employees' views on climate change and their expectations about the future. Values also affect motivation at work, which can also be reflected in an interest in acting in an environmentally responsible manner in the workplace or participating in the organization's climate activities.

2.1 Views on climate change

Almost all the respondents (92%) agree that the Earth's climate is changing (Figure 2-1). There were no differences between women and men, or between age groups, although women were more likely to think that the Earth's climate is definitely changing. The oldest group of respondents, those 60–68 years old, were the most convinced of climate change (96%). As level of education increased, the view on climate change also strengthened, with practically all (98%) of the most highly educated respondents agreeing that the climate is changing.

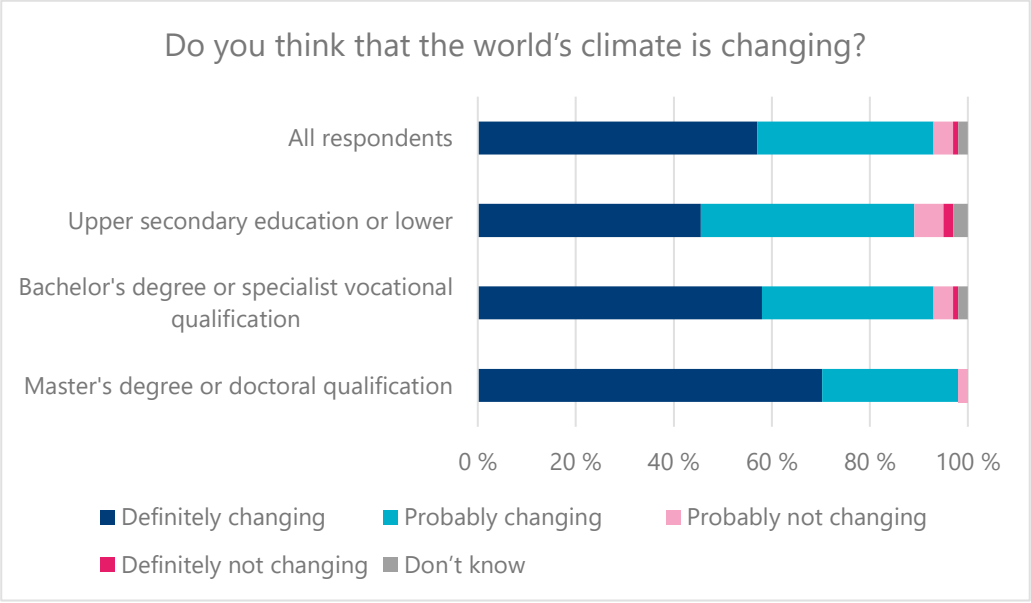

Figure 2-1 Views on climate change by level of education.

Many respondents feel that they should participate in measures to mitigate climate change (Figure 2-2). The majority of the respondents considered that they should actively take measures to mitigate climate change (options 7-10 on the scale, illustrated in Figure 2-2). More women than men considered it important to personally carry out such actions. The view that people have a personal responsibility to take action to mitigate climate change was more common among the oldest respondents and those with the highest level of education.

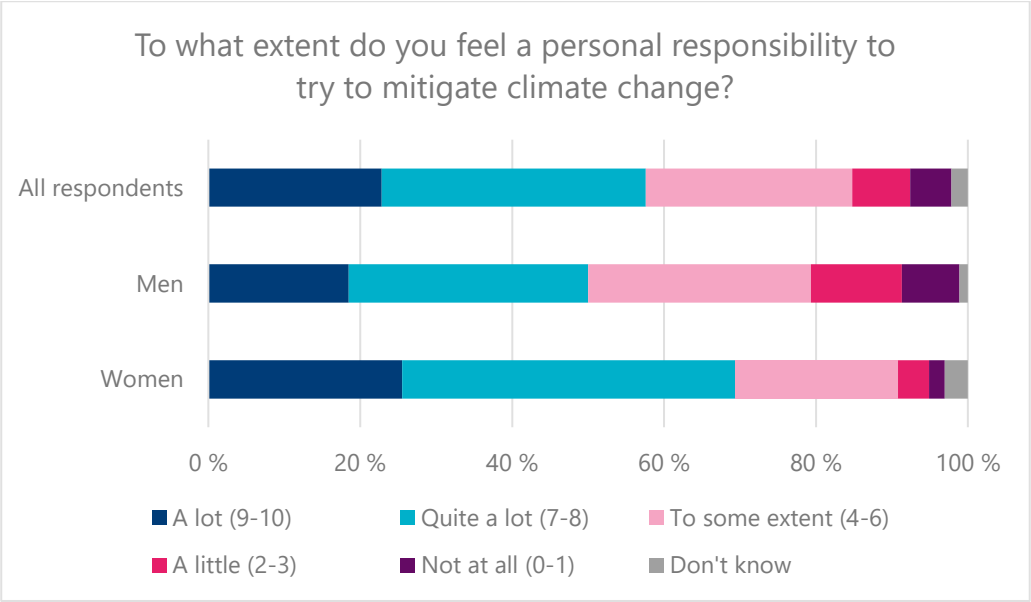

Figure 2-2 Feeling of responsibility to take action to mitigate climate change among men and women.

Climate change caused concern among the respondents. 79 percent of the respondents are worried about climate change, of which one in four respondents say they are very or extremely worried (Figure 2-3). 70 percent of men and 85 percent of women were at least somewhat concerned about climate change. Worry also increased with age. In the oldest group, the 60-68-year-old respondents, 86 percent were worried, while only 67 percent of the youngest (20-29-year-olds) were. The more educated the respondents were, the more concerned they were about climate change. Those most concerned about climate change were employees in the education and research sector and the health and social services sector (85%).

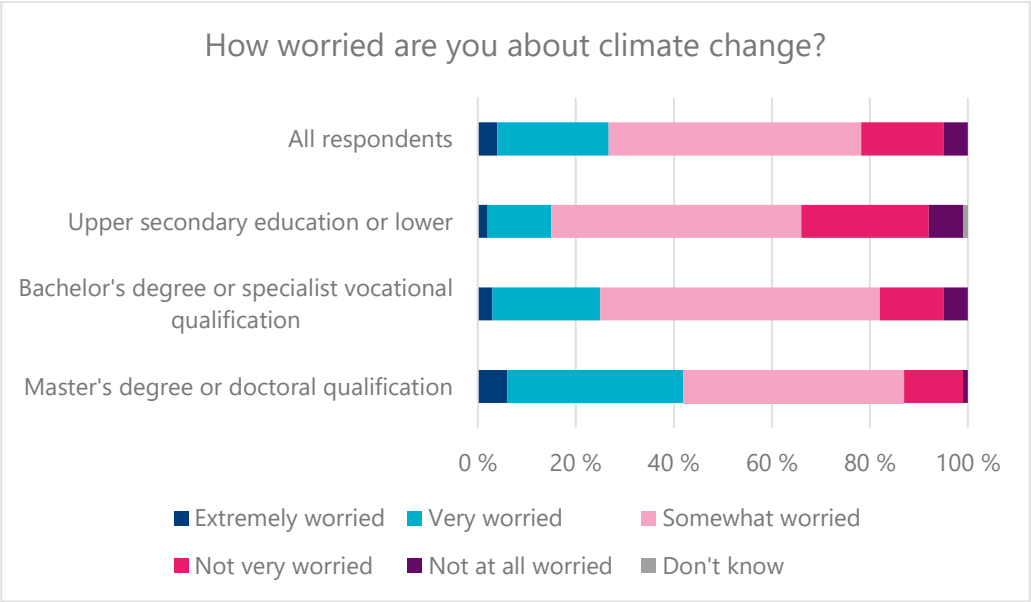

Figure 2-3 Climate change worry by level of education.

2.2 Need for measures to mitigate climate change

Women were more willing than men to adjust their own standard of living to mitigate climate change (Figure 2-4). There were no big differences among the different age groups. However, the youngest respondent group had the highest proportion of people who were not ready to adjust their own standard of living (17% strongly disagree), which may be influenced by the fact that their standard of living at this stage of life is typically lower than that of other age groups. Level of education is connected to readiness to adjust one's standard of living.

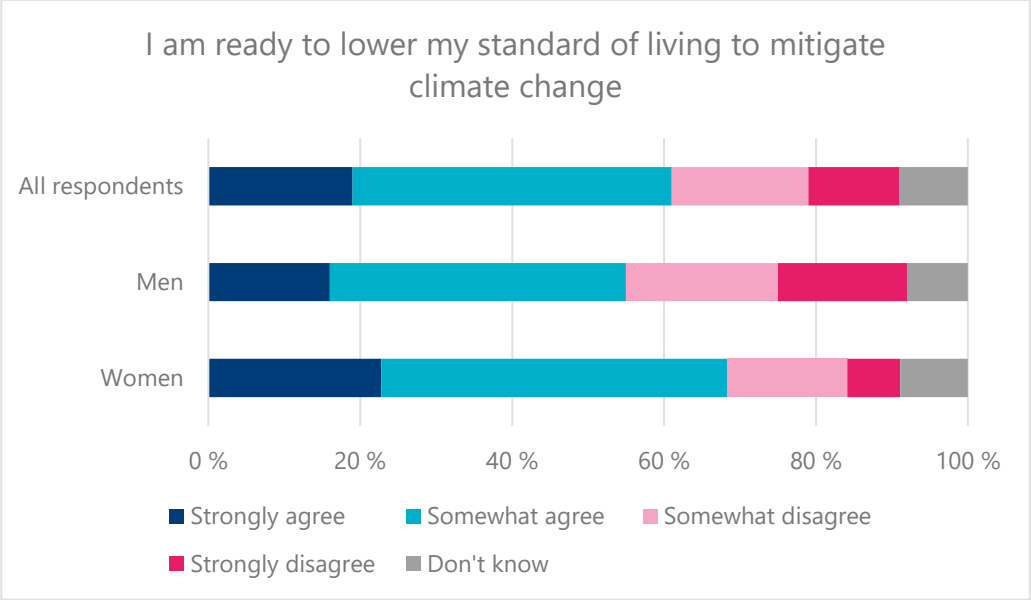

Figure 2-4 Willingness of men and women to adjust their standard of living to mitigate climate change.

We also asked whether it is important to strive for a carbon neutral society at a more general level (Figure 2-5). 78% of respondents agreed with the statement. Again, women (82%) were more likely than men to agree (73%), and the youngest respondents (75%) were slightly more hesitant than the oldest (84%). Higher levels of education were associated with a stronger feeling that it is important to pursue a carbon-neutral society.

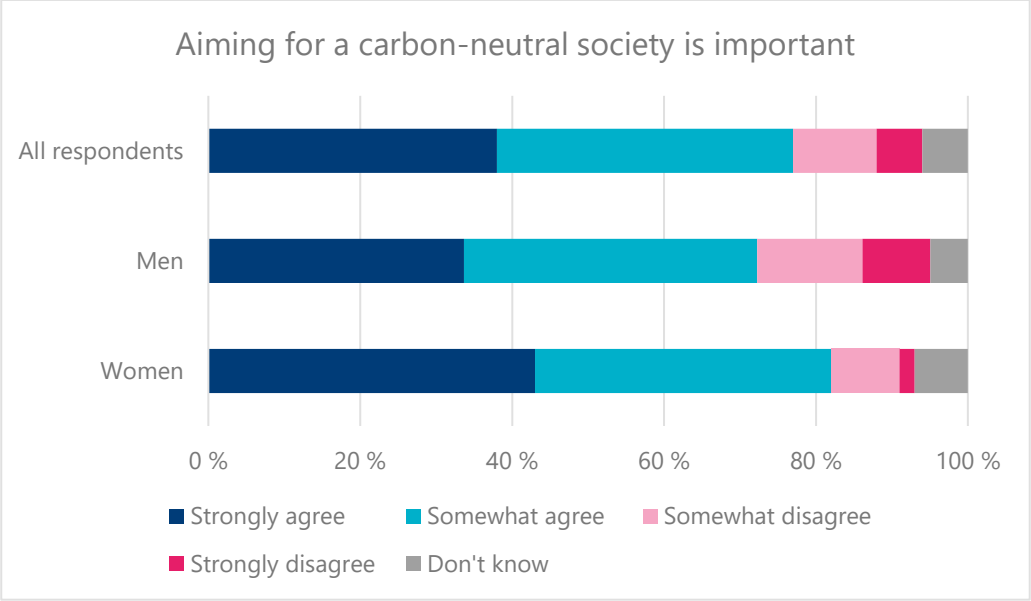

Figure 2-5 Women's and men's opinions on the importance of pursuing a carbon-neutral society.

Three out of four survey respondents believed that continuous economic growth is not possible due to the limited resources of the Earth (Figure 2-6). Older respondents were more likely to agree with the statement, with 88 percent of respondents aged 60–68 years agreeing. The youngest employees (aged 20–29 years), on the other hand, answered "Don't know" more often than those in other age groups. Women (77%) were slightly more likely to agree with the statement than men (71%). The differences between education levels were small.

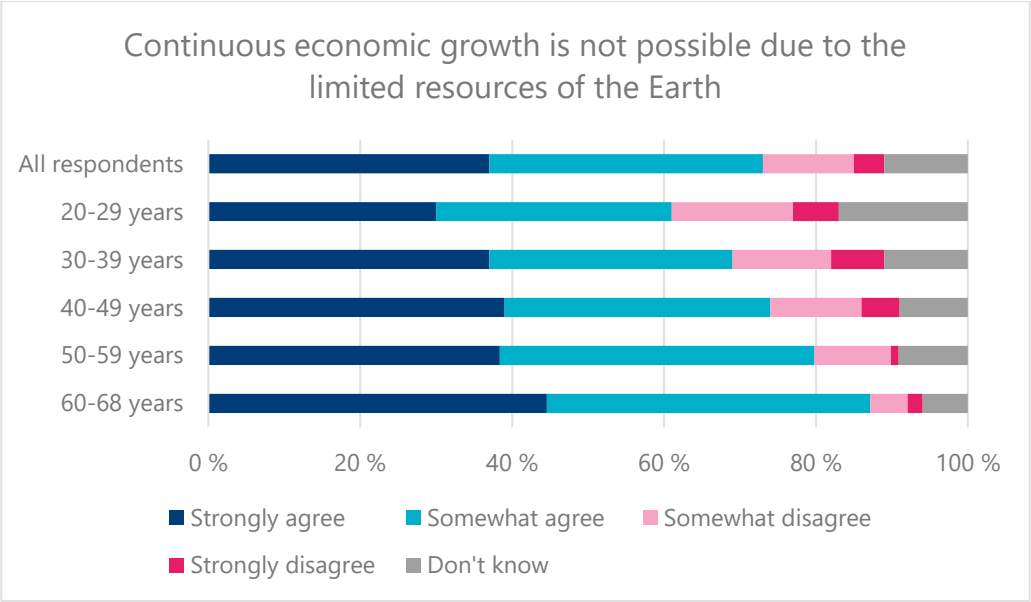

Figure 2-6 View on the possibility of sustained economic growth given the Earth's limited resources by age group.

The development of science and technology has been shown to be part of the solution to climate change challenges. More than half of the respondents believed that scientific and technological developments will solve environmental problems (Figure 2-7). Belief in technology was slightly more common among male (68%) than female respondents (56%). An examination of the educational levels of the respondents shows that an increase in the level of education is positively connected to the perception that science and technology solve environmental problems. The differences between the age groups are small.

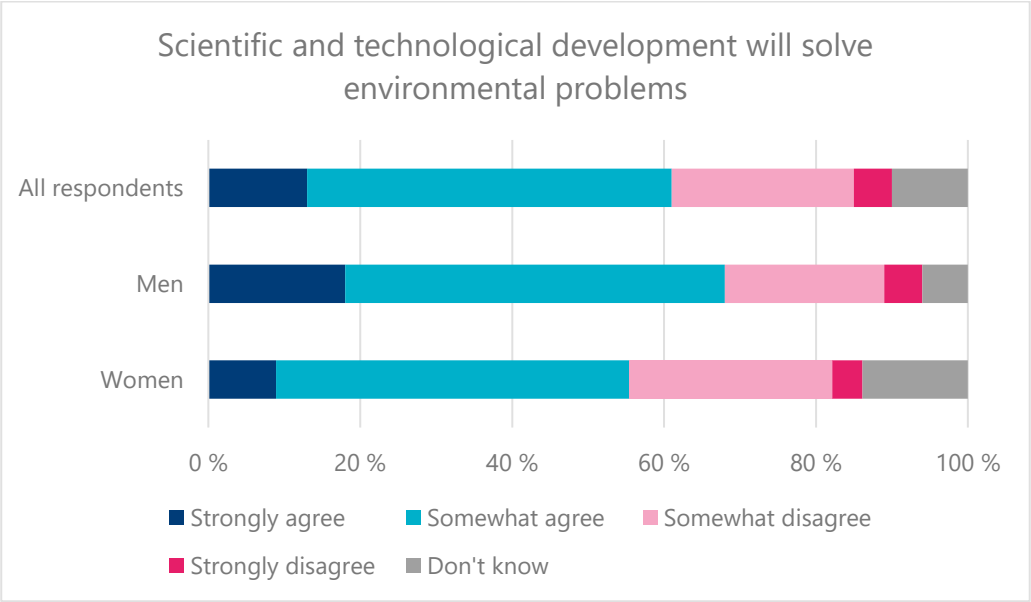

Figure 2-7 Women's and men's views on science and technology as a solution to environmental problems.

The majority of respondents (86%) felt that measures to mitigate climate change are also the responsibility of workplaces (Figure 2-8). A higher level of education is linked with the view that measures to mitigate climate change are also the responsibility of workplaces. Among the different age groups, the oldest group of respondents were more likely to agree with the statement (91%), while the share was lower (83%) among the youngest group. Men (13%) were slightly more likely to disagree with the statement than women (5%).

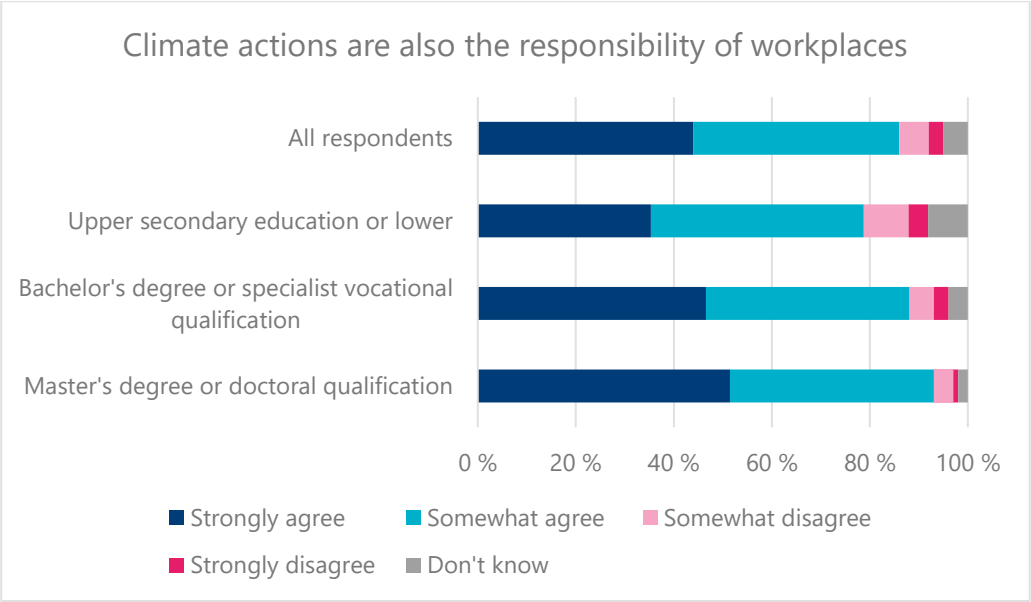

Figure 2-8 Belief that climate change mitigation measures are also the responsibility of workplaces by level of education.

Almost half of the respondents felt that their workplace could work more actively to mitigate climate change (Figure 2-9). A higher educational level is connected to the view that one's workplace could contribute more actively. Less educated respondents answered "Don't know" more often. With regard to the age groups, respondents aged 40–49 years agreed with the statement the most (57%). There were no differences between women and men.

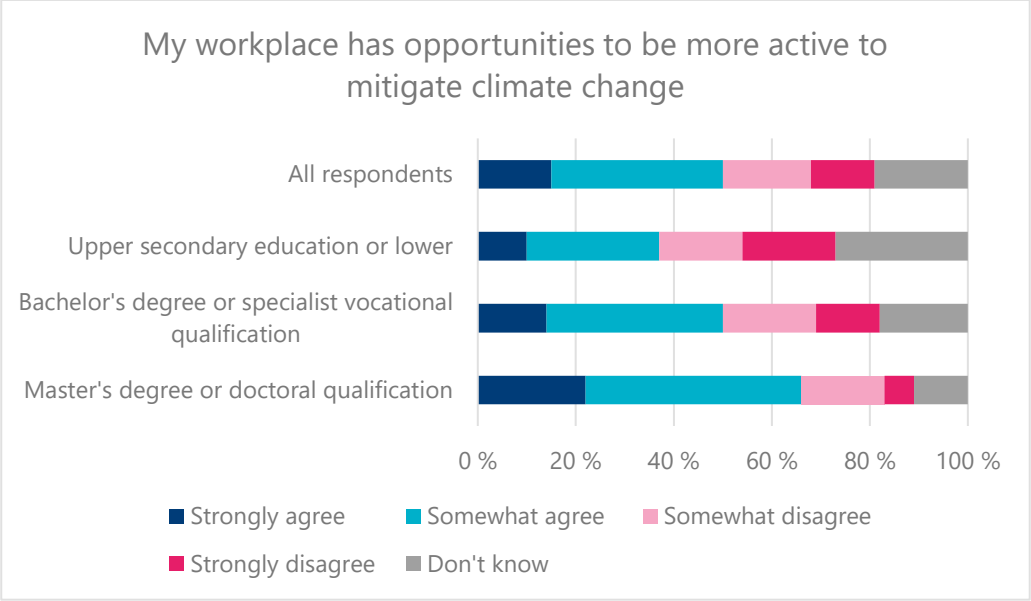

Figure 2-9 View on the capacity of workplaces to take a more active role in climate change mitigation by level of education.

2.3 Discussion

Finnish employees are quite unanimous in their view that the climate is changing, and they are worried about it. This corresponds to the results of a European survey which found that 77 percent of the European population are very concerned about climate change (Eurobarometer 2023). The general picture of the results is that women, the more educated and the oldest employees are somewhat more concerned about climate change than other groups. In addition, the majority of respondents – three out of four in the case of women – believe that they themselves should take measures to curb climate change.

In addition to climate concerns, older respondents from the wage earner population are more likely than young people to consider the goal of a carbon-neutral society to be important and do not believe in the possibility of continued economic growth due to the limited resources of the Earth. Analysis of responses organised by educational level show that highly educated respondents are more likely than others to feel that climate action is also the responsibility of the workplace, and that the pursuit of a carbon-neutral society is important.

3 Workplace climate measures

The activity and participation of workplaces, and especially companies, can be seen as essential to achieving sustainability goals (see e.g. GSDR 2023; D'Amato et al. 2022). An increasing number of organizations are striving to participate in societal problem solving such as climate change mitigation measures (Stephan et al. 2016). Although climate change and ecological sustainability crises are global problems, solutions to the problems are also created at the local level. Because of this, the solutions to climate change and ecological sustainability crises also require new kinds of activities in the workplace. Employees' views of organizations and how they are involved in change processes can uncover means to implement a green transition in workplaces (Delbridge et al. 2024).

The aim of the survey was to find out employees' views on the operations of their workplaces with regard to climate change mitigation and ecological sustainability. The views of employees build a picture of the progress of the green transition in work life as they have done, for example, in studies investigating the effects of digitalisation on work life (Alasoini & Selander 2023). Employees' views concerning their workplaces can bring new perspectives to the discussion on climate change and sustainability transitions (e.g. Hahn & Aragón-Correa 2015). To evaluate the environmental sustainability of workplaces, we asked respondents to answer questions on a Likert scale or with the answer options "yes", "no" and "I don't know".

3.1 Statements of opinion about the sustainability of the workplace

The survey examined whether employees have information about climate change mitigation measures implemented in the workplace related to changes in working methods or processes (Figure 3-1). A good half of the respondents recognised that ways of working have changed at their workplace to mitigate climate change. In the public discourse, the sectors with the largest carbon dioxide emissions, such as energy production, transportation and manufacturing, have been highlighted as key industries in which to implement climate change mitigation measures. The employees of these industries mostly agreed with the statement presented. Many respondents from knowledge-intensive services, retail and hospitality also reported mitigation measures. The lowest recognition of mitigation measures in the workplace was among respondents in the social and health services sector.

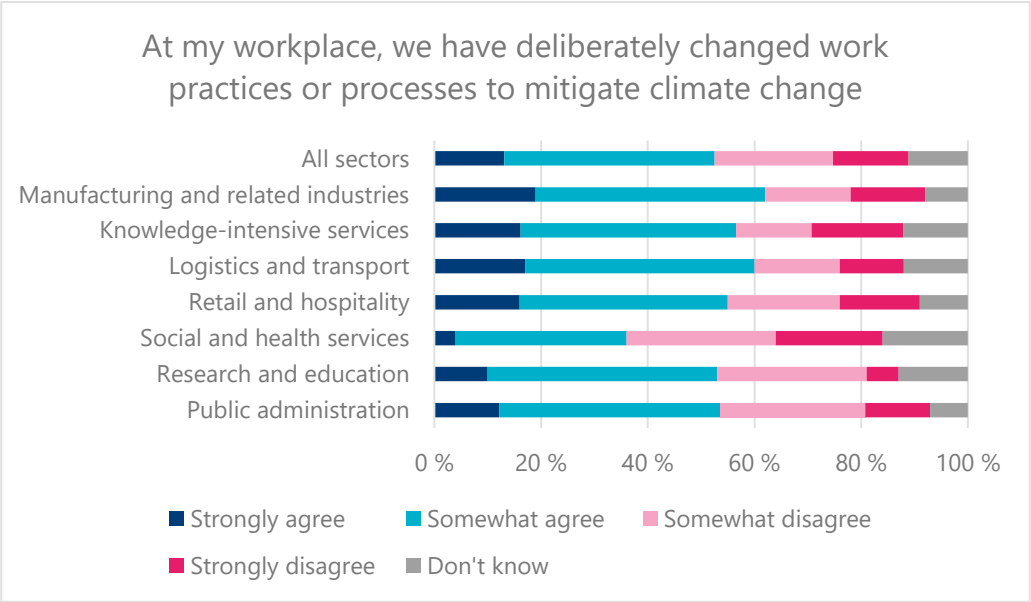

Figure 3-1 Changes in working methods or processes to mitigate climate change by sector.

The development of low-carbon technology and the introduction of new technology are ways to promote the transition towards climate-friendly production systems. The introduction of new technology can bring more eco-efficient equipment to workplaces or reduce the emissions of work processes. Figure 3-2 shows employees' views on whether climate change mitigation technology, for example energy-efficient equipment, is used at their workplace. There are industry-specific differences in the introduction of technology related to climate change mitigation in work life. New technology was most likely to be reported by employees working in logistics and transport and manufacturing and related industries. The transformation of these sectors into low-carbon sectors will be a key factor in achieving a carbon-neutral society. Employees' experiences of the changes brought about by new technology suggest that the introduction of new technology is also apparent in everyday work.

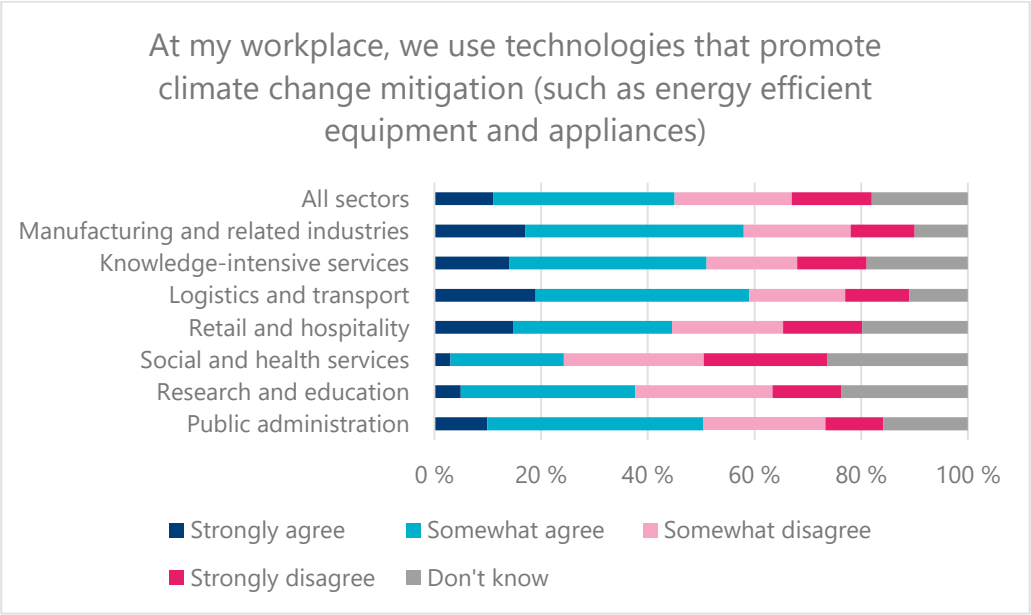

Figure 3-2 Use of technology which promotes climate change mitigation by sector.

Various materials made from natural resources are used in workplaces and as part of work processes. Workplaces also need to think about new ways of using raw materials, promote more efficient use and recyclability, or reduce their use. Half of the respondents believe that raw materials and materials are used efficiently in their workplace (Figure 3-3). Respondents from material-intensive industries such as manufacturing and related industries stood out from the rest, with almost three out of four of them believing that the use is efficient. These industries and their environmental sustainability challenges have already received attention in political decision-making, meaning material efficiency is also reflected in the everyday lives of employees. Workers in the social and health services sector were more likely to disagree with the statement than others. In this sector individually packaged or disposable tools and accessories are used a lot, for example, which may explain the negative views of employees.

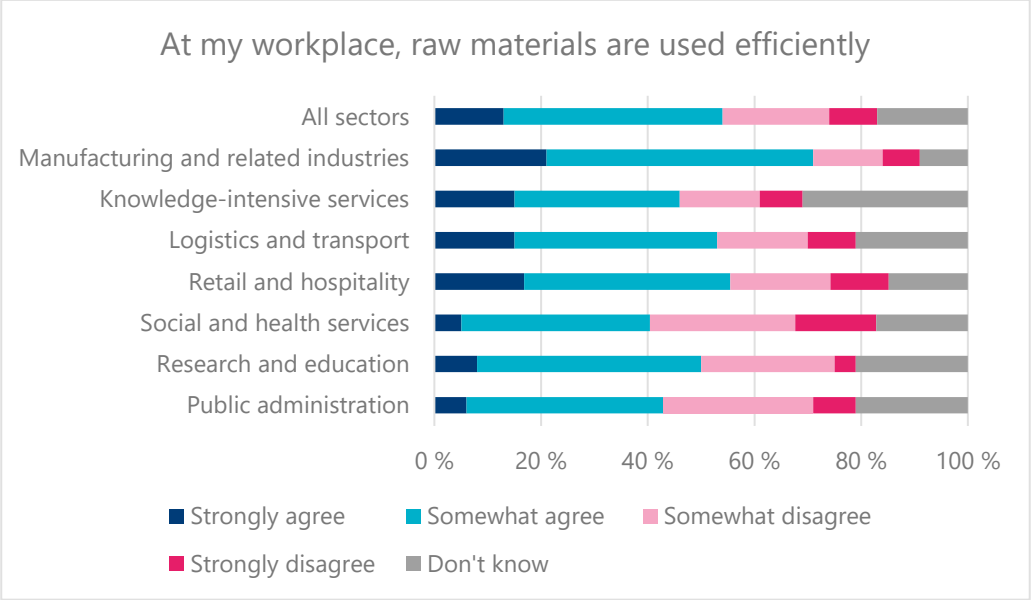

Figure 3-3 Efficiency of use of raw materials by sector.

Information about climate change caused by unsustainable human activity requires societal actors, including workplaces, to pay attention to the consequences of climate change for their activities and examine how these activities can be changed to become more climate friendly. Figure 3-4 shows the extent to which employees consider that climate change is taken into account in their workplace in a comprehensive way. About half of the respondents agreed with the statement. Respondents from manufacturing and related industries were most likely to agree, while those from the health and social services sector were least likely to agree.

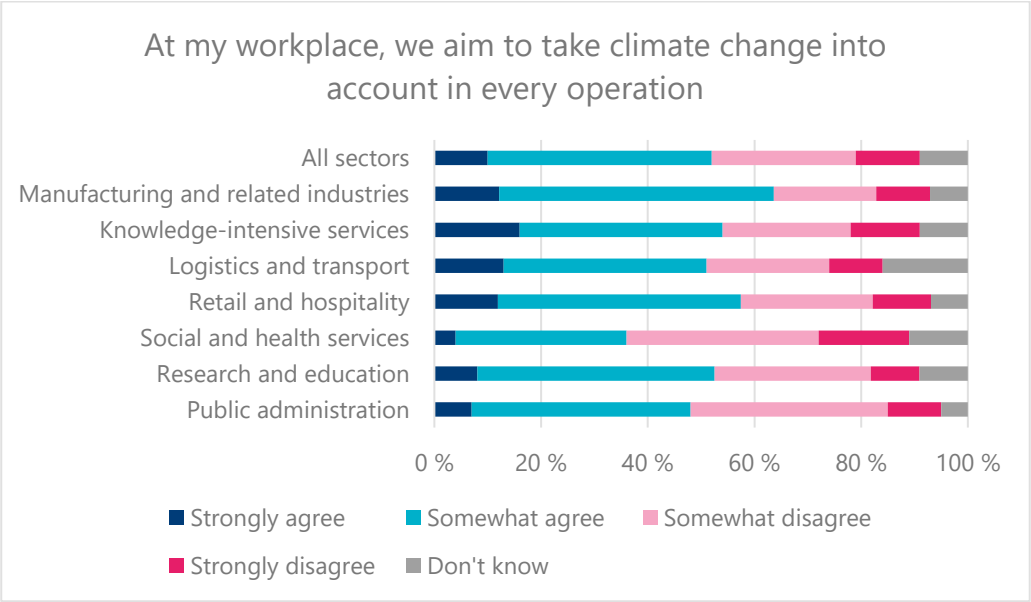

Figure 3-4 Experience of climate change being taken into account in all operations by sector.

Customers and other societal stakeholders expect climate actions from organizations, and many organizations communicate their climate-responsible actions to their customers. The survey also inquired whether employees feel that their workplace has communicated with them regarding the climate change mitigation measures planned or implemented by the organization (Figure 3-5). Just under half of the respondents reported that their organization has communicated with employees on climate change mitigation measures, with those working in manufacturing and related industries most likely to report this. Workers in the social and health services sector were again the least likely to hold this opinion.

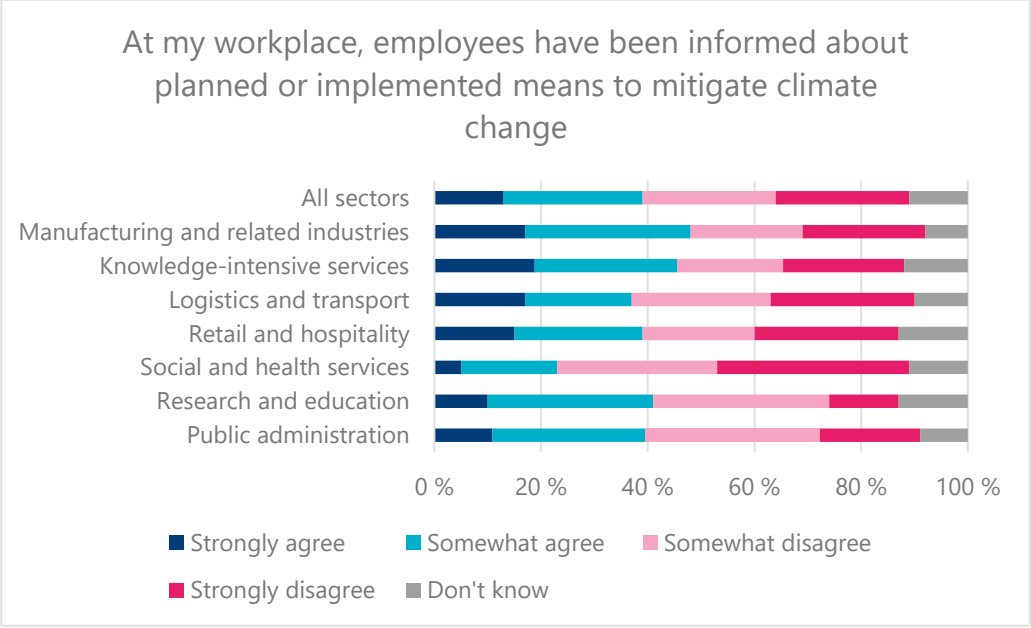

Figure 3-5 Communication aimed at employees on workplace climate change mitigation measures by sector.

3.2 Climate action in the workplace

The survey inquired about various actions that workplaces can take to promote the green transition. In particular, the survey examined climate measures that employees were assumed to be aware of and that could also apply to employees. For some questions, as much as a third of respondents chose the "Don't know" answer option. A significant number of the respondents therefore had no information about the climate measures being asked about. The "Don't know" answer group is discussed in the Conclusions chapter.

The survey asked whether the respondent's workplace has set a climate target (Figure 3-6). About one in four respondents reported this to be the case. Climate targets in workplaces were least often reported by employees in the social and health services sector, and most often by employees working in manufacturing and related industries.

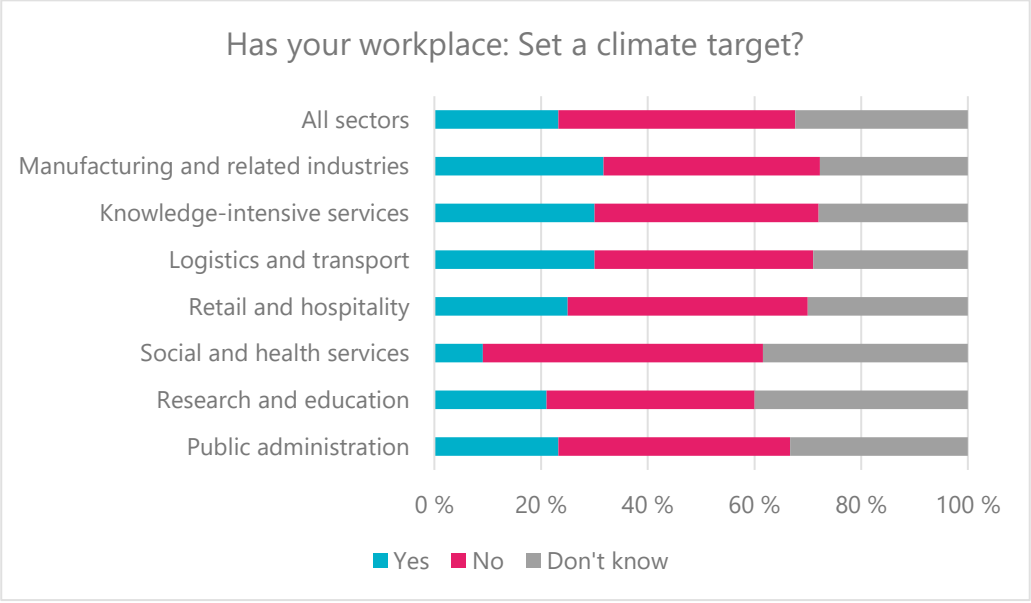

Figure 3-6 Climate targets set by sector.

Employees were also asked if their workplace has an environmental or climate programme or strategy (Figure 3-7). Programmes or strategies can describe issues in more detail, including how the workplace strives to achieve climate targets or what actions that promote climate or environmental sustainability in the workplace are planned or already being implemented. Employees can also be involved in creating a climate programme or strategy. About one in four respondents said that their workplace has a climate programme or strategy. Programmes are most common in the workplaces of people working in public administration and knowledge-intensive services and manufacturing and related industries. Respondents from the social and health services sector were least likely to mention such programmes and also most likely to answer the question with "Don't know".

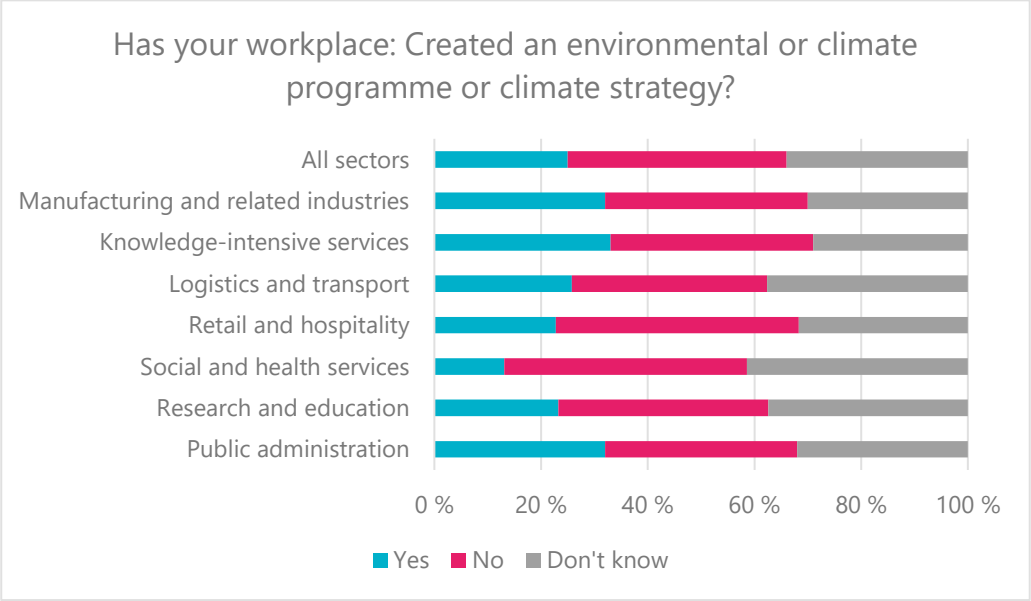

Figure 3-7 Prevalence of environmental or climate programmes or strategies by sector.

Appointing a designated actor in organizations to handle issues related to climate change supports the implementation of climate measures. Among employees working in education and research and knowledge-intensive services, more than one in three respondents said that a designated actor had been appointed in their organization (Figure 3-8). The designated actor can lower the threshold for proposing improvements to workplace procedures. In addition, information about the actor can help employees in the search for information about their organization's climate change-related activities.

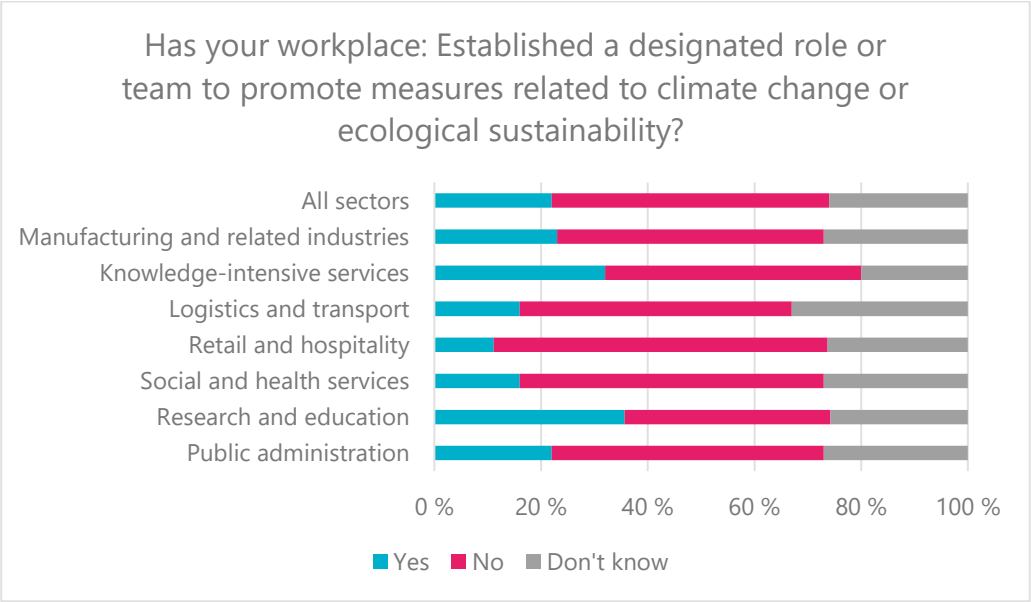

Figure 3-8 A designated actor is responsible for issues related to climate change in the workplace: response by sector.

The survey inquired whether employers and employees had collaborated on the development of climate-friendly operating methods in respondents' workplaces (Figure 3-9). Employees can come up with new ideas on how to work in a more climate-friendly manner. Joint development with employers can boost the further development and implementation of ideas in the workplace. Joint development was most common in research and education. However, about half of the respondents said that there had been no joint development related to climate friendliness in their workplace.

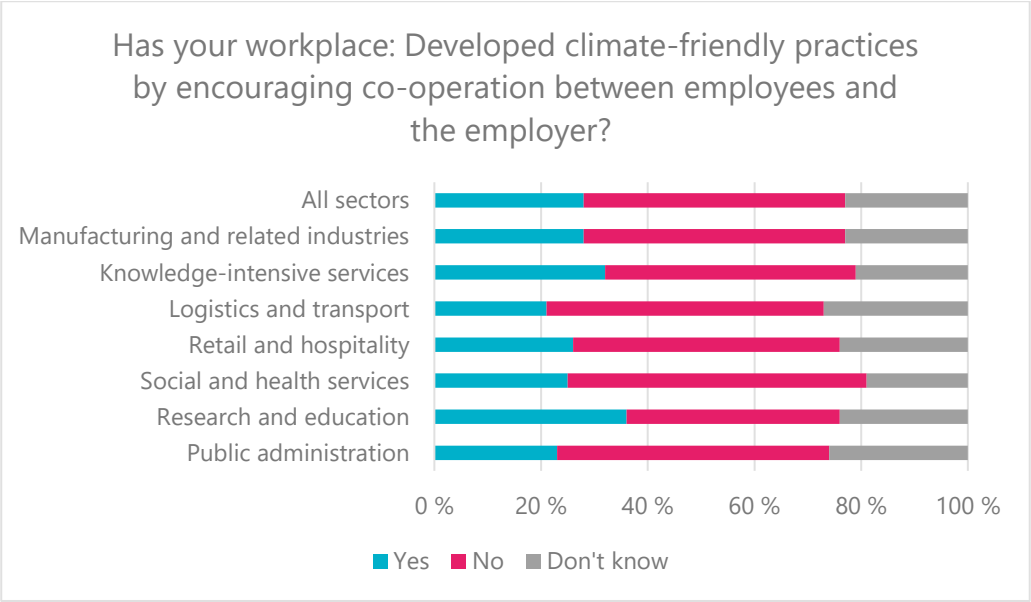

Figure 3-9 Co-development of climate-friendly operating methods by sector.

Along with co-development, various experiments and competitions that can be used to develop climate-friendly solutions suitable for local communities have received attention in the research literature. In the respondents' workplaces, experiments or competitions aimed at finding climate actions are not very common, as only one tenth of respondents reported them (Figure 3-10). Such experiments are most common in the workplaces of those working in education and research, where about one in four reported such experiments.

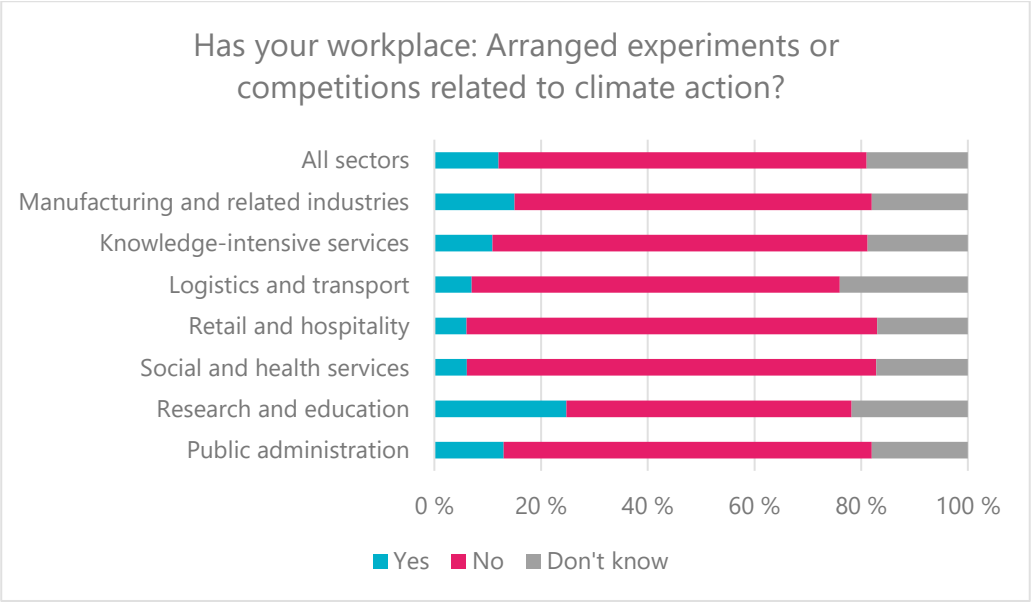

Figure 3-10 Experiments and competitions related to climate action by sector.

Climate-friendly ideas and initiatives proposed by employees can lead to changes in working methods in the wider organization. The survey inquired about respondents' perceptions of whether employees' suggestions have led to changes in their organization (Figure 3-11). This was most common among those working in education and research, where about one in three respondents said that employee initiatives have already changed established operating methods.

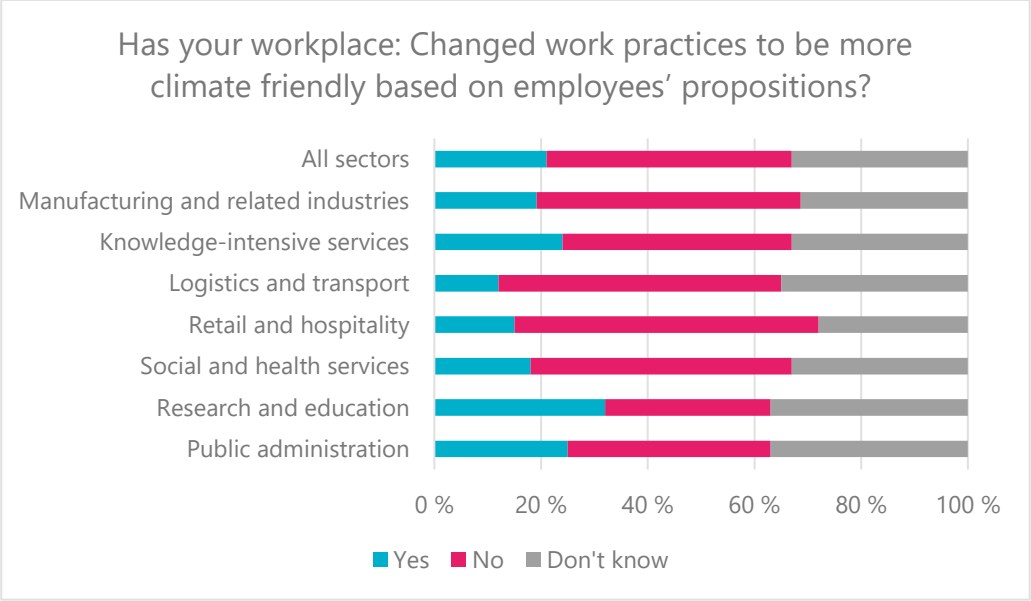

Figure 3-11 Climate-friendly proposals by employees have led to changes in operating methods: response by sector.

Rewarding employees can increase their interest in participating in the development of the organization. However, giving recognition to employees is not very common (Figure 3-12). Just under 10 percent of respondents reported receiving some kind of recognition. More than a fifth of respondents did not know if they would receive recognition for proposing an initiative at the workplace. Receiving recognition or some other reward can serve as an incentive for employees to propose initiatives. If employee participation is desired by the organization, it should be encouraged.

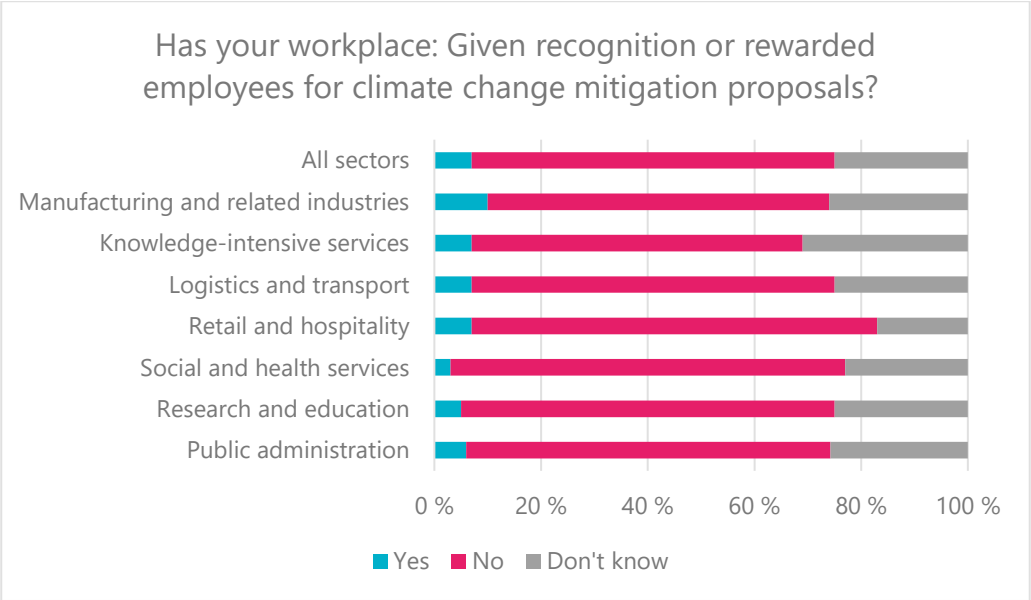

Figure 3-12 Recognition is given to employees for climate change mitigation initiatives: response by sector.

3.3 Discussion

Climate change and the green transition have been found to affect employees in many ways, for example through new skill requirements. On the other hand, less attention has been paid to whether employees consider their workplaces to be environmentally sustainable, and to what extent workplaces have created internal activities involving employees with an eye to striving to develop in a more environmentally sustainable direction.

The statements presented in Section 3.1 show the trends and differences between industries. Employees in the social and health services sector most often disagreed with the statements presented. The social and health services sector has not received much

attention in the discussions related to climate change, climate change mitigation or the green transition (see Pulkki et al. 2023). It may be that the issues and changes related to the green transition are not yet visible in the everyday lives of workers in the sector.

The responses of employees working in manufacturing and related industries (construction, energy production, HVAC or maintenance) differed significantly from those of workers in the social and health services sector. In manufacturing and related industries, the direct climate emissions of operations are significant. Efforts have already been made there to actively reduce climate emissions, and the measures are ongoing. That employees agree with many of the statements suggests that the reforms promoting climate-friendliness in this sector are visible to them or that the changes have an impact on them as well. On the other hand, a number of employees in manufacturing and related industries disagreed with the statements evaluating the sustainability of the workplace.

Section 3.2 described various actions that can be taken in the workplace to mitigate climate change and create a climate-friendly operating culture. Implementing a sustainability transition requires actions in different areas of society, and the goal of these questions was to map the prevalence of climate actions in workplaces. Based on the results, it seems that climate actions in workplaces are not very common. Climate change or the green transition have not yet set in motion internal development activities in a large number of organizations. Prior to this survey, employees in Finland have never been asked as extensively about workplace climate actions, so the results create a picture of the current situation and may help develop ways to speed up organizations' climate actions.

4 Views on the development of climate and environmental skills

4.1 The impact of climate change on skill requirements and skills development

Climate change and related adaptation and mitigation measures have major impacts on occupations, job content and the skills needed at work. It is generally assumed that jobs in fossil- and material-intensive industries will decrease, while new jobs will be created in renewable energy production, clean technology and green products, and various occupations and services within the circular economy (Cedefop 2021; Kuusi et al. 2021; see Chapter 6 for further details). Existing tasks are also becoming greener: all jobs require new sustainability skills and environmentally sustainable production and operating methods to mitigate climate change (Kuusi et al. 2021).

Moreover, many professions and tasks require the ability to anticipate the impacts of climate change and take systematic adaptation measures. In the construction industry, for example, designers must take into account the durability requirements of buildings in increasingly humid and warmer climates, and supervisors and employees must develop safe working practices on construction sites, including in extreme weather conditions.

Anticipating new skill requirements and systematic skills development are thus essential prerequisites for climate change mitigation and adaptation measures, as well as for promoting the green transition (Cedefop 2021; Eurofound 2023; ILO 2015, 2019; Kuusela et al. 2023; Kuusi et al. 2021). The level of skills required is increasing, and continuous updating of skills is increasingly needed (Kuusela et al. 2023; Kuusi et al. 2021). Some skills are generic and applicable across all sectors, such as general sustainability skills, the ability to change and digital literacy, while others are specific to particular sectors and job tasks. The systematic and continuous development of skills requires actions at various levels of the education system, from basic education to vocational and university education, as well as in further training, in-house staff training provided by work organizations and on-the-job learning (Kuusela et al. 2023).

The development of skills is also crucial from the perspective of a just transition. The term "just transition" refers to the fair distribution of the costs and benefits of climate change mitigation among different stakeholders. In particular, the International Labour Organization (ILO) and labour unions have emphasised the need for a fair and non-discriminatory transition to an environmentally sustainable economy, providing

qualitatively better jobs and opportunities for skills development for all (ILO 2015, 2019). The EU's Green Deal programme also emphasises social responsibility and a just transition, aiming to ensure that "no one is left behind" (European Commission 2019). Skills development, including further training, retraining and reskilling, serves as a buffer against the adverse effects and disruptions caused by the transition, reducing the risks of unemployment, poverty and inequality.

In Finnish society, skills development has been widely recognised as a key strategy to prepare for climate change and promote climate change mitigation measures such as the green transition. Raising the level of skills and competence has been called for in government and ministry programmes, low-carbon maps of sectors and reports by labour market unions (e.g. EK 2020; Kuusi et al. 2021; Paloneva & Takamäki 2020; SAK 2019; STTK 2019). However, to what extent these expressions of intent have led to concrete actions at the workplace level can be questioned.

With our survey we investigated employees' experiences of the extent to which employers have assessed employees' skills in environmental and climate issues, organised training and orientation or provided instruction on climate change and mitigation measures at work.

4.2 Mapping of climate and environmental competence

Identifying employees' existing sustainability skills can help us understand the areas in which additional knowledge is needed in the workplace and how employees' expertise could be utilised to develop sustainable practices in the workplace.

The climate and environmental competence of employees has been evaluated in only a few workplaces. Only one in ten respondents reported that their workplace had evaluated employees' climate and environmental competence (Figure 4-1).

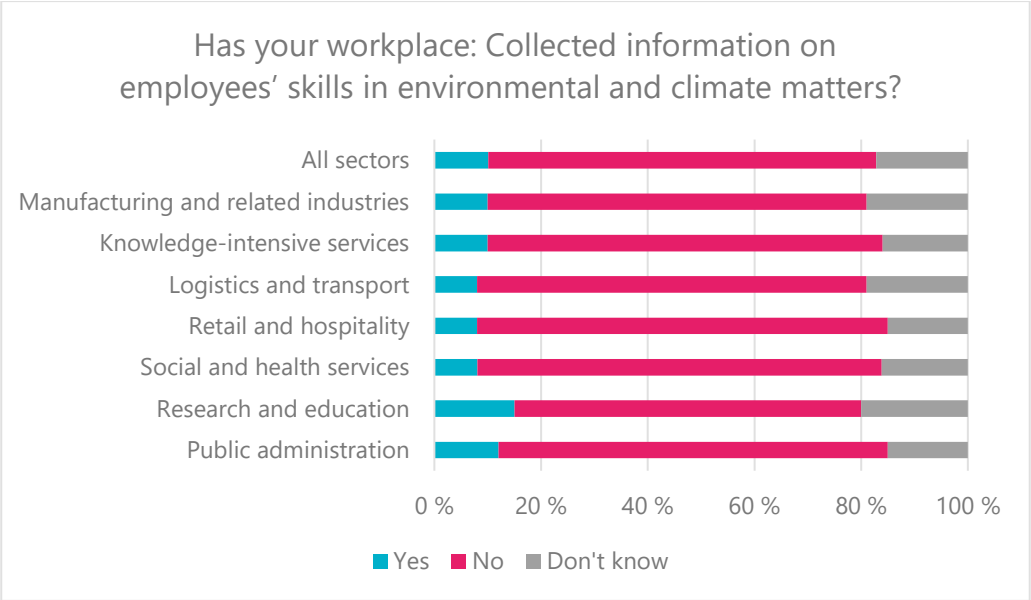

Figure 4-1 Organizations map employees' climate and environmental competence: response by sector.

There were no differences between women and men or between different age groups with regard to competence mapping. In contrast, educational level had some effect, as skills had been mapped the least among the lowest educated (8%) and most among the highest educated (13%).

Organizations in the education and research (15%) and public administration (12%) sectors were most likely to have mapped competence, with those in logistics and transport, retail and hospitality, and social and health services (8%) least likely to have done so. Typically, those working in expert positions are more highly educated, and their tasks may require special climate and environmental expertise more often than other occupations.

Large organizations (those with over 250 employees) were twice as likely to have surveyed their personnel's climate and environmental competence (15%) as small organizations with fewer than 50 employees (7%). Large organizations have greater resources for mapping and developing competence, while in small organizations, on

the other hand, sufficient information about personnel's competence areas and development needs can be gathered more easily during everyday work.

4.3 Training on climate change and its mitigation

The provision of training and education on climate change or its mitigation is still limited. Only 13 per cent of respondents reported that their workplace had provided training on climate change or its mitigation (Figure 4-2).

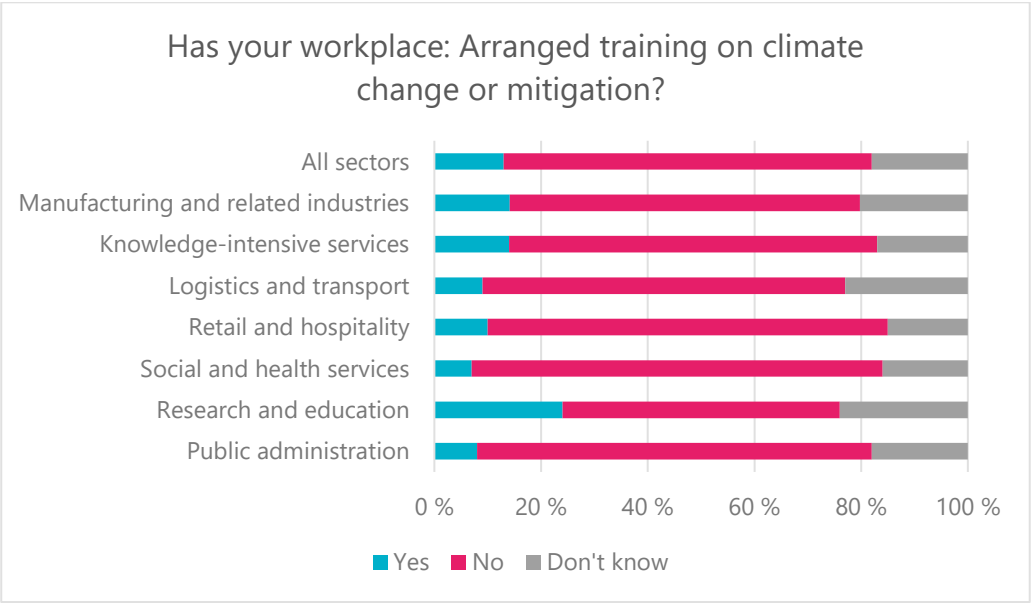

Figure 4-2 Provision of training on climate change or its mitigation by sector.

Training was most likely to have been provided in education and research organizations, with approximately one quarter (24%) of respondents in this sector having received training. These institutions provide training to other organizations, and climate change, its impacts, and mitigation measures are growing areas of research, making up-to-date staff expertise crucial for them.

Training had been provided least in public administration (8%) and social and health services (7%). Surprisingly, training had rarely been given to respondents working in the logistics and transport sector (9%), despite its pivotal role in implementing the green transition and climate change mitigation.

One-fifth of large organizations had provided training, while only one-tenth of small ones had done so. Both customers and society expect large companies to act responsibly and sustainably, as well as to show concrete evidence of this (e.g. Corporate Social Responsibility Disclosure (CSRD) and carbon footprint reporting). Large companies also have more resources for training. It is assumed that in the future, small and medium-sized enterprises will also need to demonstrate the sustainability of their operations, and will thus also need additional expertise.

In studies of expertise, it has been observed that supplementary and continuing education often tends to focus on individuals who are already highly educated (e.g. Lyly-Yrjänäinen et al. 2023). Our survey results found the same; those with more education were significantly more likely than others to report that their workplace had provided training on climate issues (highly educated 21%, secondary or lower education 8%). Younger age groups (8%) were less likely to have received training than older age groups (16%). There were no differences between men and women.

We further investigated the situation regarding the development of competence related to climate change by asking questions about the general environmental and climate skills needed in many fields (Figure 4-3). These include, for example, energy efficiency, recycling and efficient use of materials. Additionally, in terms of adapting to climate change, we asked whether the respondent's workplace had provided guidance or training for working in extreme weather conditions. Respondents were significantly more likely to respond positively to these specific themes than to the more general question on the provision of training related to climate change and its mitigation.

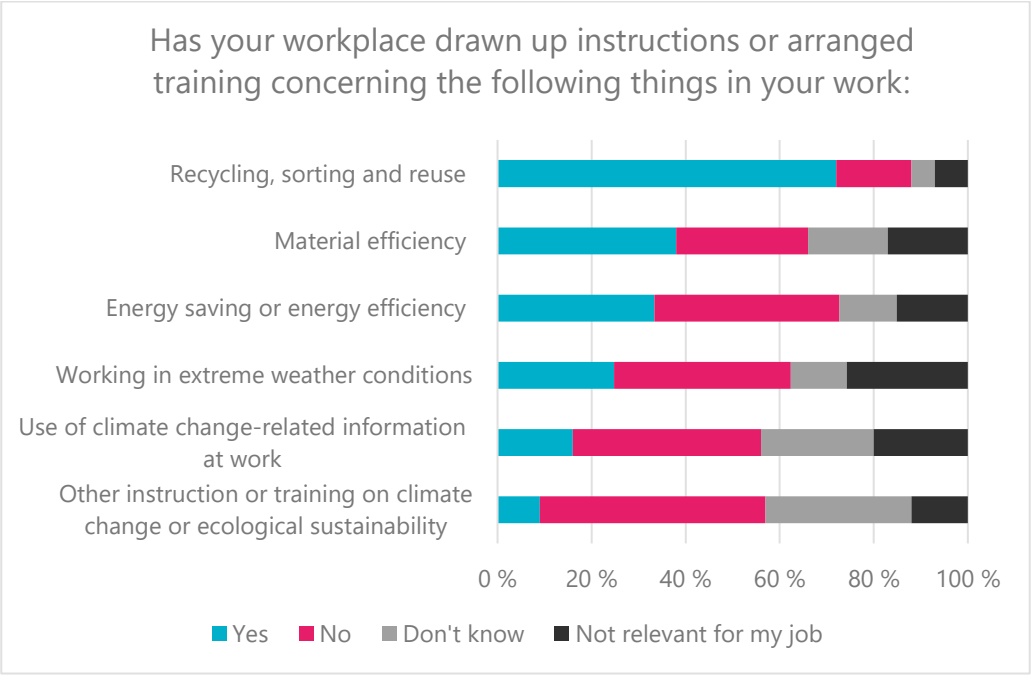

Figure 4-3 Training and instruction in general climate and environmental skills.

Nearly three-quarters (72%) of the respondents said they had received instruction or training related to recycling, sorting and reuse. Nearly two-fifths (38%) had received instruction or training on material efficiency, and one-third reported receiving instruction related to energy saving. A quarter of the respondents had received instruction or training on work in extreme weather conditions.

Responses regarding the instruction and training received varied significantly by industry. Figure 4-4 shows which industries gave the most and least instruction or training on specific topics. Across all industries, most guidance was received on recycling, sorting and reuse. In retail and hospitality, the highest proportion, or

approximately four-fifths (78%) of respondents, had received guidance on these topics, while in the logistics and transport sector over half (53%) had received guidance.

Training and instruction on material and resource efficiency were provided most in manufacturing and related industries (60%). Approximately two-fifths of respondents working in logistics and transport (42%) and in manufacturing and related industries (41%) had received guidance on energy saving. Material and resource efficiency, as well as energy efficiency, are key process optimisation measures in these industries, and the focus of instruction and training was likely on improving operational efficiency rather than mitigating climate change. This interpretation is supported by the respondents' perception that they had not received training on climate change mitigation, even though these actions are also crucial from a sustainability perspective.

Guidance and training on utilising climate change related information and knowledge in work were provided most in public administration (21%) and in manufacturing and related industries (20%). Public administration produces regulations, guidelines and information for various industries so adequate expertise and consistent action on climate and sustainability issues are crucial in administrative expert roles.

In the responses to the open-ended survey questions, other guidance that was mentioned included climate education and procurement guidelines. Additionally, guidance and training were received on carbon footprint calculation and reduction, as well as life cycle thinking and sustainable design.

Especially in industries exposed to weather conditions, emphasis had been placed on instruction on working in extreme weather conditions. The most instruction was received in the logistics and transport sector (34%), but nearly one-third of respondents in manufacturing and related industries (28%) and social and health services (29%) had also received guidance.

Overall, social and health care services were at the lower end in this more detailed examination of skills development, as respondents from this sector had received the least guidance and training in most areas.

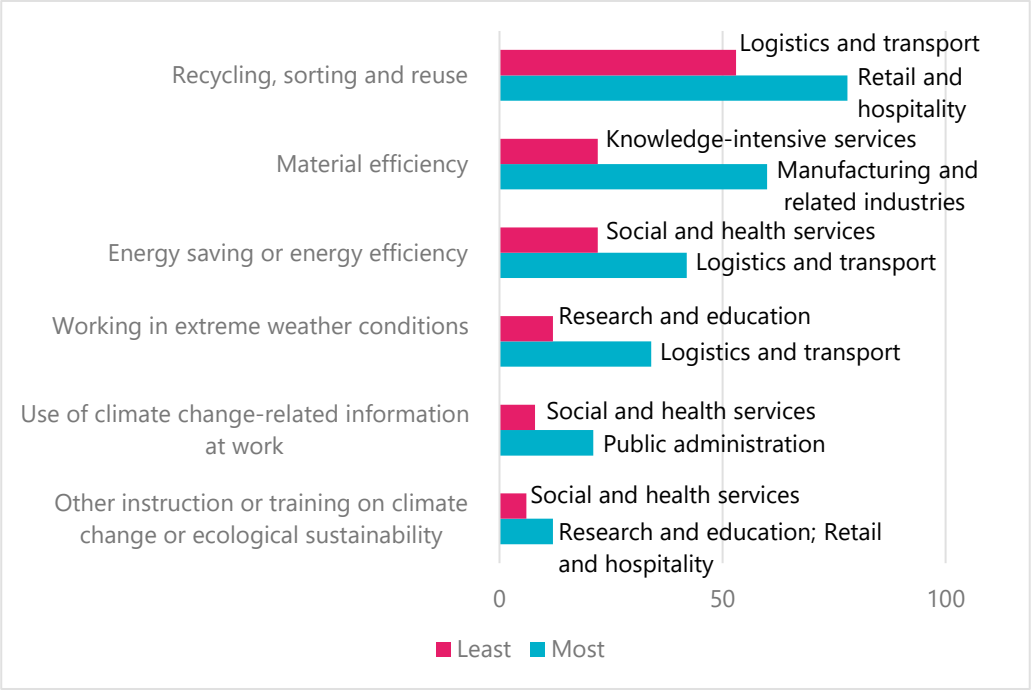

Figure 4-4 Levels of training or instruction provided by sector.

Large and small organizations were equally likely to have provided instruction or training on sorting, recycling and reuse (about three-quarters of organizations), material efficiency (about two-fifths) and working in extreme weather conditions (about a quarter). However, large organizations were significantly more likely to have provided guidance on energy efficiency (42%) and utilising climate information in work (23%) than small organizations.

4.4 Job orientation on climate-friendly practices

Climate-friendly practices are part of the orientation process in approximately one in ten workplaces (12% of respondents). An introduction to climate-friendly practices was slightly more common in orientations in manufacturing and related industries and in retail and hospitality (15%). It seems that guidance on climate-friendly ways of working – recycling, material use or energy consumption, for example – are being included in orientations in industries where these practices can have a significant impact.

On the other hand, climate-friendly practices were less common in orientation processes in the education and research sectors and in public administration, which may be explained by the nature of expert work. Experts require sustainability expertise more for substantive work rather than in the daily operational practices typically covered during orientation.

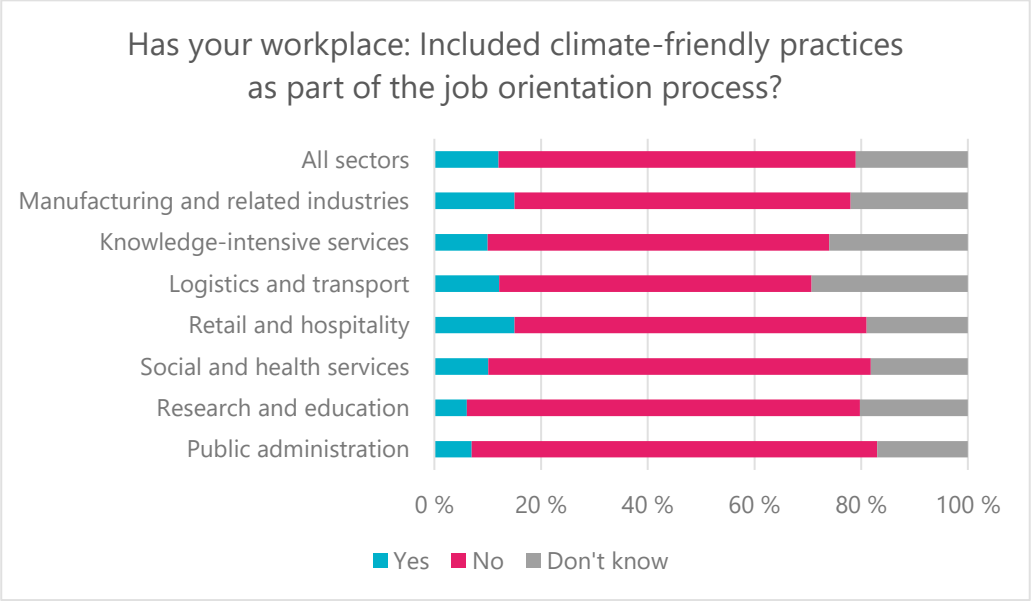

Figure 4-5 Orientation included climate-friendly practices: response by sector.

In large organizations (likely companies, as orientation was uncommon in public administration), orientation on climate-friendly practices was somewhat more common than in small organizations, being provided by 15% of organizations employing over 250 people and 10% of those employing fewer than 50 people. There were no differences between men and women or among age groups.

4.5 Discussion

Practical measures to improve and develop employees' environmental and climate skills are still in their early stages. Only 13 percent of respondents in this employee survey stated that their workplace had provided training on climate change mitigation. It is possible that if asked from the management, the results would be higher, as climate change mitigation and responsibility are central principles in the strategies of many companies, and thus goals for environmental and climate skills development may have been set. Nevertheless, employees' perception of the lack of training is an important indicator that the implementation of these plans is not very advanced in practice.

On the other hand, the survey results indicate that significantly more workplaces had provided instruction or training on themes related to climate change, such as sorting, recycling, energy saving or efficient use of materials (ranging from 33% to 73% of workplaces, depending on the theme). This raises the question of whether workplaces are creating a sufficiently comprehensive understanding of the factors influencing climate change mitigation and the interconnections between different development measures. If, for example, the efficient use of energy and materials is only seen as a means of saving on costs, important ideas and methods of climate change mitigation may be overlooked, or, at worst, solutions that are detrimental to the climate, sustainability and biodiversity may be implemented.

Climate change mitigation and the green transition require expertise from several different disciplines and sectors, from the creation of new scientific knowledge to concrete applications. Examples of relevant areas of expertise include climate-related knowledge, energy production, efficiency and renewable energy, land use and forest management, the electrification of transport, and social and cultural competence and societal influence related to promoting the transition (e.g. ILO 2019; Paloneva & Takamäki, 2020). High-level theoretical expertise provides the foundation for the technical innovations required for climate change mitigation and the green transition. On the other hand, in practical work service and maintenance skills and manual skills are also considered important. The life cycle carbon footprint of many products and services, as well as sustainable production processes (including social, health and safety aspects), are determined at the designer's desk. Therefore, broad expertise among designers is considered crucial for the success of the green transition, or more broadly, sustainable development. From the perspective of work organizations, the transition also requires the development of leadership and resilience (Ala-Laurinaho et al., 2020).

Thus, expertise related to climate change mitigation is very diverse, which is why mapping it with a survey is challenging. Some skills are generic, such as critical thinking or media literacy, while others are highly specific to particular industries, organizations or job roles (ILO 2019).

More research is needed on the types of expertise required in different industries and workplaces, the methods used for training and particularly for developing expertise in the workplace, and how these methods could be further supplemented and developed. Currently, those with higher levels of education have received the most training. It is crucial to also support the development of expertise and retraining for those with lower levels of education in order to ensure the workforce has sufficient competence and improve individuals' employment opportunities as well as to promote the just green transition across all of society.

5 Environmentally responsible actions by employees

Employees are interested in the content and flow of their work, and many want to influence how work is done. Information about climate change or concerns about the state of the environment can increase employees' readiness to take measures to protect the climate and the environment (Trezise & Richardson 2023). Environmentally responsible actions, such as energy saving and initiation of environmentally friendly work practices, have also been studied at work (Francoeur et al. 2021). Although previous research on environmentally responsible actions at work has mostly focused on office environments, some actions can be implemented in all kinds of workplaces and in many jobs (Temminck et al. 2015).

Different products or services are produced at work, and some of this work is more related to implementing the green transition. However, some tasks can be seen as hindrances for activities related to climate change mitigation. The connection of one's work to the climate and the environment can be a matter of interest or concern for employees. Changing jobs or moving from one sector to another for climate-related reasons is one form of employee agency in work life brought about by climate change (Polman 2023). Knowledge about climate change can increase employees' reflection on the relationship between their work and the green transition and the opportunity to take measures to protect the environment at work, even if their core work tasks are not related to the implementation of the green transition.

5.1 Environmentally responsible actions at work

Employees can have ideas on how to take climate change mitigation or ecological sustainability into account in their work. Almost half of the respondents said that they have such ideas (Figure 5-1). Respondents aged 40–49 years reported having their own ideas most often (48%), although the differences between the age groups were small. Across the different education levels, respondents with a university degree (52%) reported having their own ideas most often. In the different sectors of work, ideas were most common among employees working in education and research (55%). The differences between men and women were small.

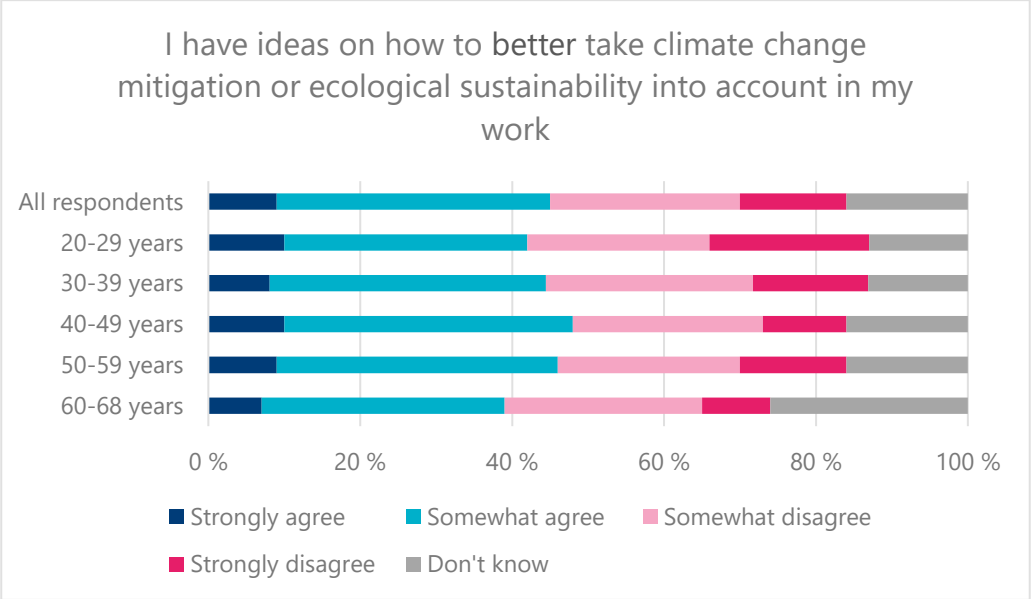

Figure 5-1 Employees have their own sustainability ideas: response by age group.

Employees can implement environmentally responsible actions by making changes in their working practices or methods. About every second respondent said that they have already made changes in their daily working practices or methods to promote climate change mitigation or ecological sustainability (Figure 5-2). The differences between gender groups were small, although slightly more women (53%) reported having made changes at work than men (48%). When looking at age groups, 50–59-year-olds (56%) were most likely to have made such changes and 20-29-year-olds (40%) reported of those the least. Those working in education and research (61%) were most likely to say that they had made changes in their work, along with those with a university degree (60%).

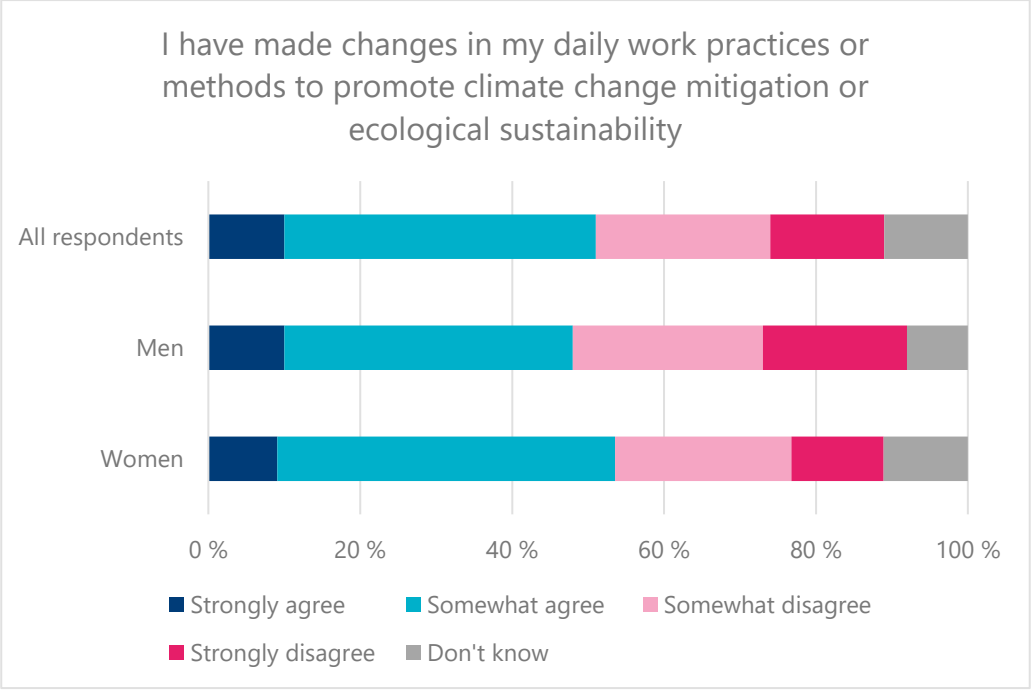

Figure 5-2 Changes in sustainable working practices or methods made by women and men.

One in four respondents mentioned that they had made suggestions at the workplace to promote ecological sustainability or climate change mitigation (Figure 5-3). The differences between women and men and between different age groups were quite small. The youngest respondents were least likely to report making suggestions (15%) and the 50-59-year-old age group most likely (27%). 19 percent of respondents with a vocational school or lower degree said that they had made suggestions about sustainability in the workplace, while one in four respondents from groups with higher levels of education reported making suggestions. The differences between the sectors were small, although respondents working in education and research (27%) reported making suggestions more often than others.

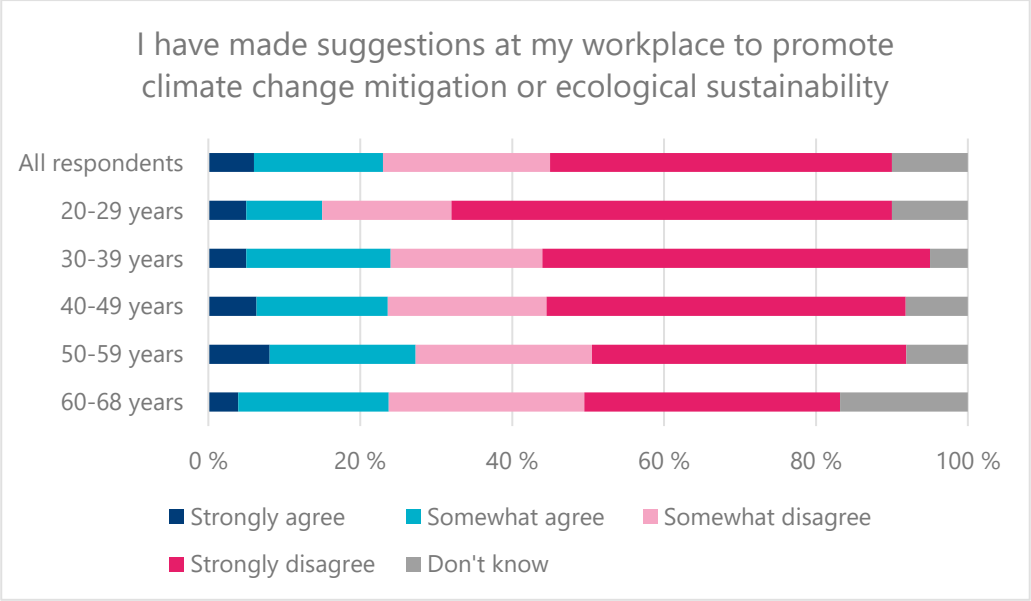

Figure 5-3 Sustainability related suggestions made at the workplace by age group.

The majority of employees are interested in learning more about ways to promote climate change mitigation and ecological sustainability in their work (Figure 5-4). There were some differences in willingness to learn between women and men. Women (79%) and respondents with the highest level of education (83%) reported an interest in learning new things more often than others. There were no significant differences between the age groups, although respondents aged 20–29 years were the least interested in learning more about climate change mitigation and ecological sustainability (66%). Based on a sector-specific comparison, employees in education and research (80%) and the social and health services sector (79%) were most interested in learning more about sustainable work.

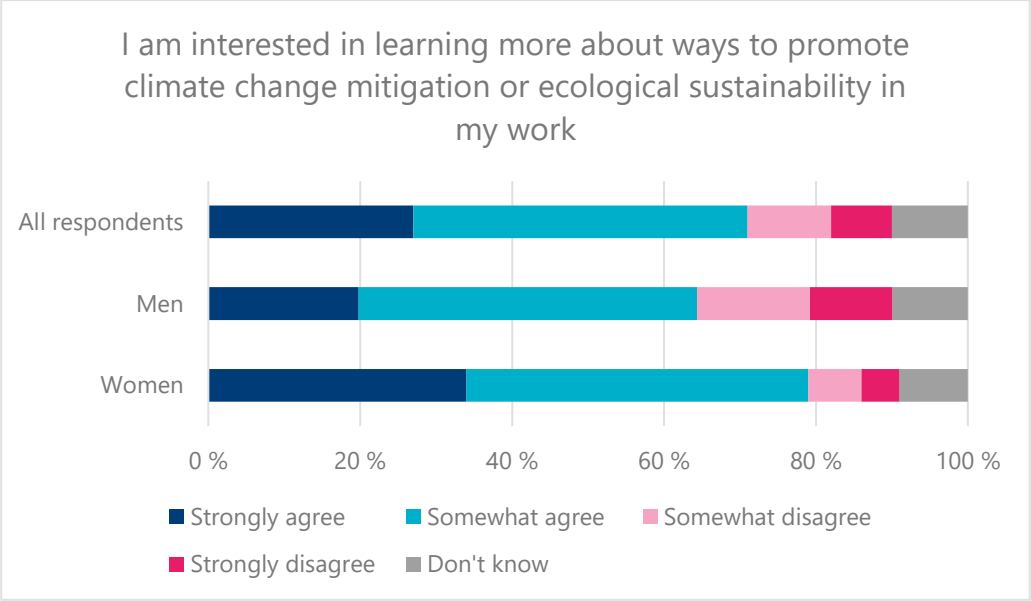

Figure 5-4 Interest in learning more about sustainability at work among women and men.

More than half (65%) of the respondents said that they already pay attention to their energy use at work (Figure 5-5). Considering energy use at work is more common among older workers (71% of 50-59-year-olds and 53% of 20-29-year-olds). There were no significant differences between women and men. A higher level of education is positively associated with increased consideration of energy use at work. By sector, employees in education and research (73%) and retail and hospitality (68%) were most likely to pay attention to energy use. The response categories also included the option "not relevant in my work". The idea behind this was to offer an option to those respondents who feel that the question of energy use is not relevant in their work, for instance due to limited possibilities to influence energy use.

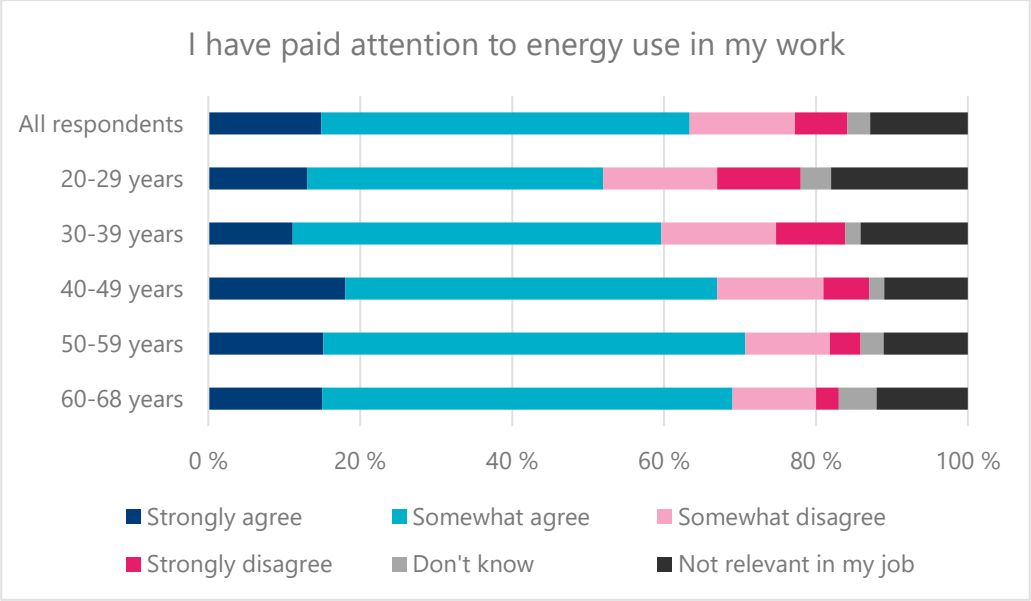

Figure 5-5 Consideration of energy use at work by age group.

Two out of three respondents reported having paid attention to the use of raw materials in their work (Figure 5-6). Slightly more women (69%) reported having paid attention to the issue than men (61%). In addition, men (21%) were more likely to evaluate the statement as irrelevant in their work than women (16%). The differences between education levels and age groups were small, although the youngest age group was least likely to have paid attention to the issue (60%). By sector of work, considering the use of raw materials at work is most common among respondents working in education and research (76%), social and health services (72%) and manufacturing and related industries (66%).

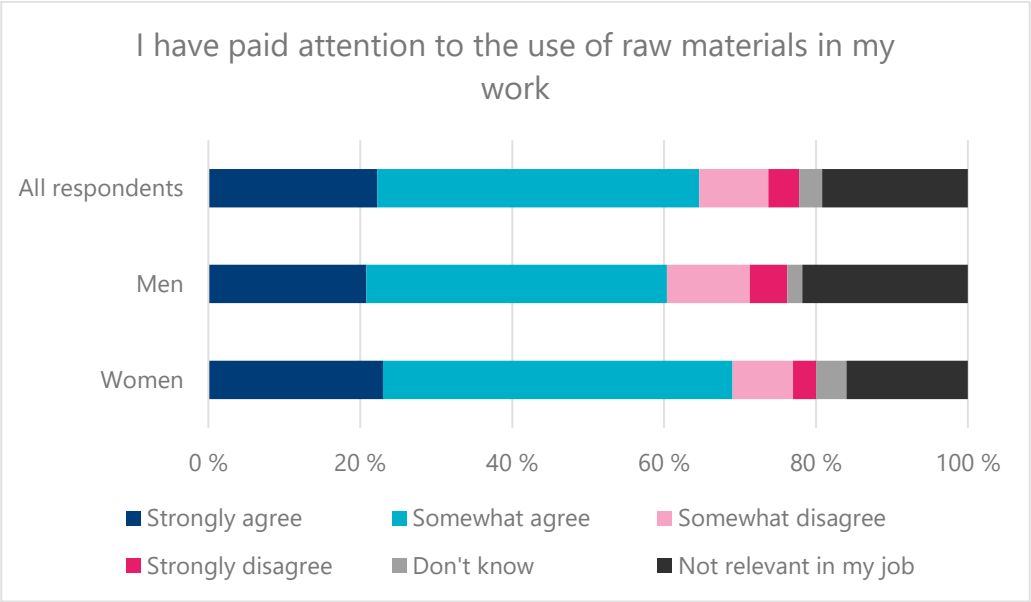

Figure 5-6 Consideration of the use of raw materials at work among men and women.

5.2 Thoughts about the connection between work and the environment and climate

Work often has direct or indirect effects on the environment or climate. More than half (54%) of the employees had thought about how their work affects the climate (Figure 5-7). Consideration of the climate impacts of one's work was most common among respondents aged 40–49 years (58%). A high level of education is connected to thinking about the climate effects of work (62% of those with a higher university degree agreed or somewhat agreed with the statement). There was not much variation between the different sectors of work, although respondents from the education and research sector and public administration were most likely to say that they have thought about the effects of their work on the climate (58%). There were no differences between male and female respondents.

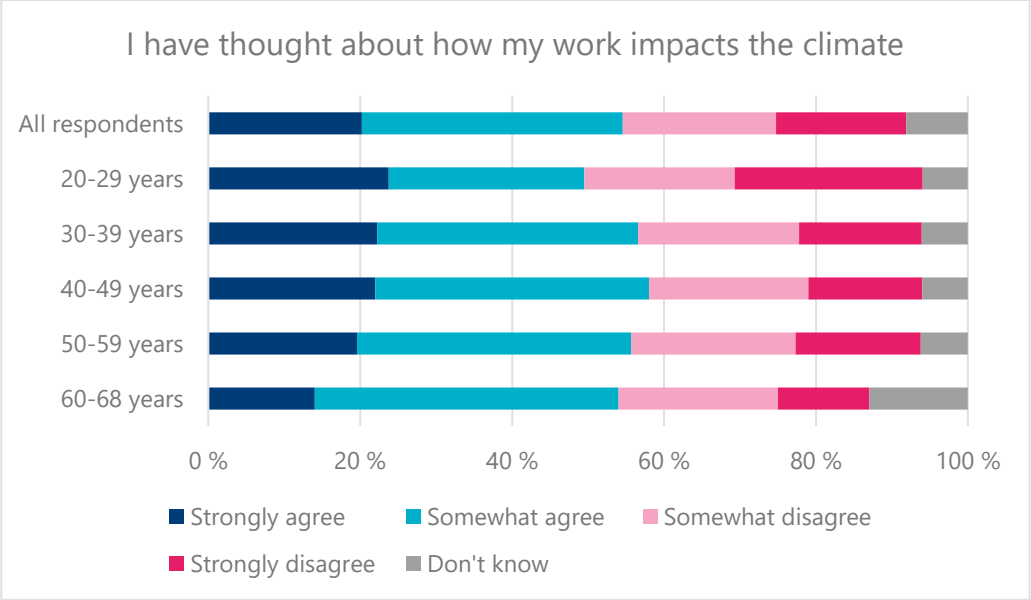

Figure 5-7 Consideration of the climate impacts of work by age group.

Employees may feel certain tasks in their job are harmful to the climate. Figure 5-8 shows employees' perceptions of whether climate-friendly activities in their work are easy and effortless. About a third of the employees (38%) considered it easy and effortless to act in a climate-friendly way in their work. Respondents working in knowledge-intensive services were most likely to feel this way (52%). The differences between men and women and between different age groups were small. Those with a university degree (49%) were more likely than others to believe that climate-friendly activities at work are easy and effortless.

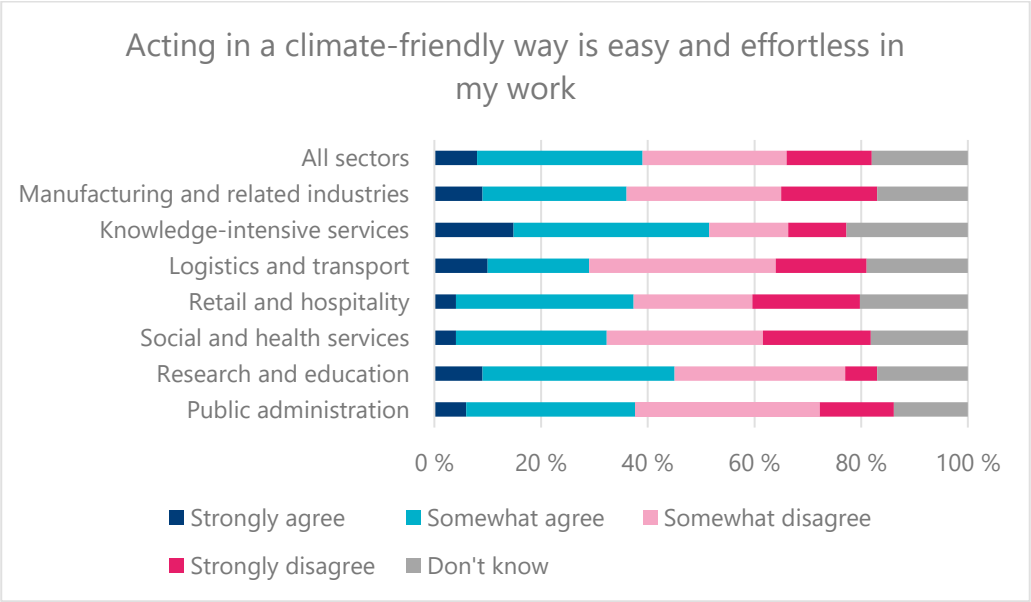

Figure 5-8 Acting in climate-friendly ways at work is effortless and easy: response by sector of work.

The possible effects of their work on the climate and the environment can also be a matter of concern for employees. About one in three (30%) respondents said that they are worried about the negative effects of their work on the climate (Figure 5-9). Concerns about the climate impact of work were most common among those working in retail and hospitality (37%), health and social services (37%) and transport and logistics (34%). There were no significant differences between the age groups, although respondents aged 30–39 years (35%) experienced the greatest climate concern with regard to their work. There were no significant differences in climate concern caused by work between women and men or respondents with different levels of education.

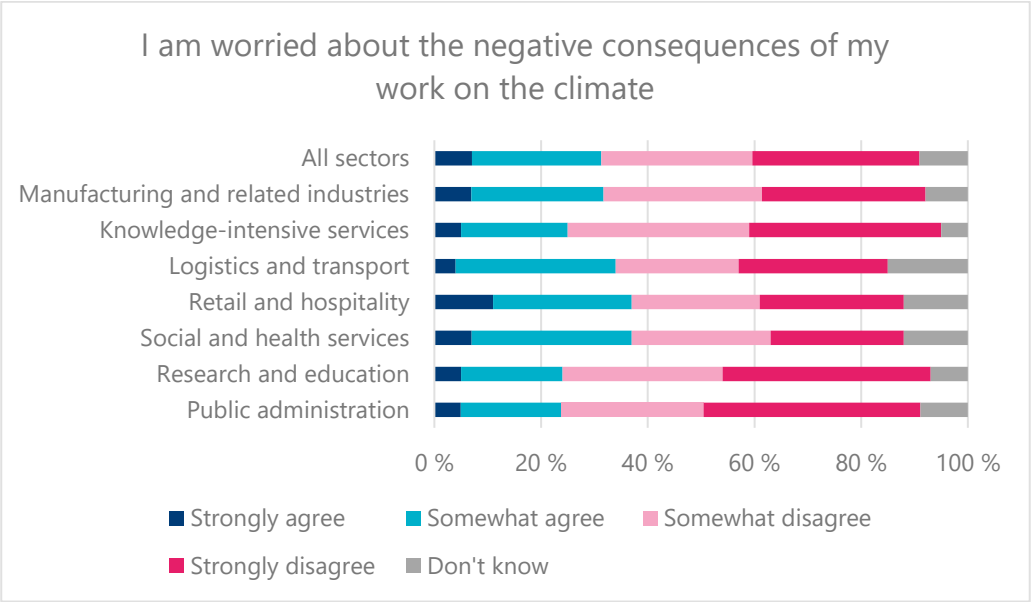

Figure 5-9 Worry about the negative climate impacts of work by sector of work.

Work can be in conflict with an employee's environmental values. About one in five (19%) respondents felt that their work and their environmental values were in conflict (Figure 5-10). Conflict between environmental values and work was slightly more common among respondents with less education (22%). There were no significant differences between age groups. Women (22%) were slightly more likely than men (17%) to experience conflict in terms of their values at work. By sector, conflicts between environmental values and work were most common among workers in the social and health services (28%), retail and hospitality (26%) and transport and mobility sectors (24%).

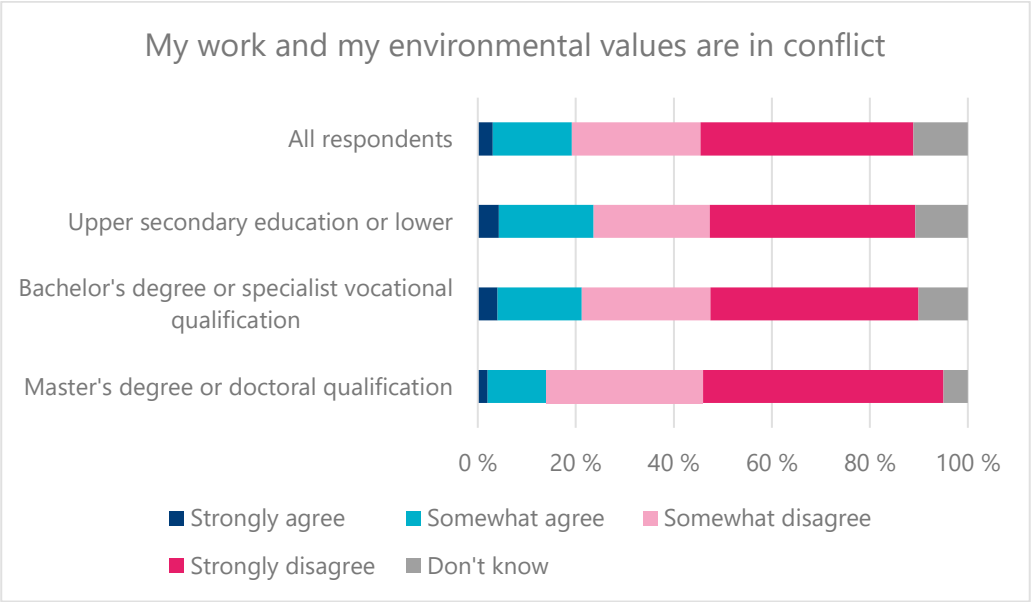

Figure 5-10 Conflict between work and environmental values by sector of work.

5.3 Discussion

Employees in Finland are interested in working in more climate-friendly ways. Some have already implemented changes in their work or made development proposals related to ecological sustainability and climate change mitigation in the workplace. An examination of the responses of different age groups shows that older respondents are more likely to have made changes in their work in order to act in more climate-friendly ways or to have presented proposals on the subject in their workplace. The experience in the workplace role that comes with age may enable older employees to have more agency than younger respondents. An examination of the differences between

educational groups shows that respondents with a lower level of education were more likely to experience conflict between their work and their environmental values than other groups and were least likely to agree with the statement "climate friendliness is easy and effortless in my work". Work can involve experiences of engaging in activities considered harmful to the environment, which especially concern some of the less educated employees.

The survey questions did not elicit answers on which issues the changes or development proposals were related to. However, based on the open-ended responses to the Climate Change and Work survey, it appears that employees have diverse thoughts and ideas about workplace climate and environmental issues, such as commuting and work content. Moreover, working with clients or other actors outside the work organization can offer opportunities to adapt working methods to be more environmentally sustainable.

Information about climate change and other eco-crises increases understanding of the effects of human activity on the environment, which can also be reflected in the thoughts and expectations of employees related to their work. Many professions and work tasks have developed over a long period of time, and climate or environmental issues are often not considered when doing work and developing the tasks involved. For some employees, environmental values can become a guiding factor behind work life expectations or career plans.

6 Views on the labour market impacts of climate change

It has been predicted that climate change, adaptation to it and the green transition aimed at mitigating it will have a wide variety of impacts on the labour market, occupational structure and the contents of occupations. Climate change and the green transition can first affect the contents of existing occupations when new knowledge and skills are required of those working in them. On the other hand, it is possible that the demand for some occupations will increase, while for others it may decrease without significant changes in their task contents. In addition, climate change and the green transition may lead to the emergence of entirely new or different types of occupations (see Chapter 4 above). In the following sections we will examine the labour market impacts of climate change, first through a brief literature review and then in light of employees' views.

6.1 Climate change, the green transition and the labour market

Changes in the occupational structure and the contents of occupations can be linked to climate change and the green transition in different ways. As such, climate change can have effects on the demand for and contents of some occupations. However, many of the effects of climate change and the green transition on the labour market originate from change processes in workplaces, through which organizations try to adapt to climate change or contribute to mitigating it, for example by changing their products, services, processes, organization, work methods or workspaces.

From the point of view of mitigating climate change and adapting to it, it can be assumed that change will be concentrated in industries that are responsible for the majority of climate emissions on the one hand, and on the other, are producing the solutions to reduce climate emissions. Based on Statistics Finland's air emissions accounting, manufacturing (NACE C), energy production (NACE D) and transport and storage (NACE H) accounted for almost 85 percent of fossil carbon dioxide (CO2) emissions in Finland in 2021[1]. The consulting company McKinsey's assessment of the global distribution of CO2 emissions by industry is very similar (McKinsey & Company 2022).

[1] The proportion was calculated (6 October 2023) from the database maintained by Statistics Finland: https://pxdata.stat.fi/PxWeb/pxweb/fi/StatFin/StatFin__tilma/statfin_tilma_pxt_11ig.px/

However, it is important to understand that industries are not closed systems. Value chains and networks are formed across industries. The research and other literature on sustainability transitions (e.g. Geels & Schot 2007; Markard et al. 2012) has tended to focus less on individual industries and more on the systems that are vital for the functioning of the economy and society and that cross boundaries between industries. These include, for example, energy production, food production, transportation, health and well-being services, education, construction and financial services. Thus, many actions aimed at mitigating or adapting to climate change have cross-sectoral effects.

Based on an analysis commissioned by the Finnish Government, the impacts of the green transition on the labour market will primarily affect expert occupations and (typically male-dominated) production worker occupations (Busk et al. 2023). The green transition is expected to increase the demand for various highly skilled occupations and especially for professionals whose job requires a high level of education. Based on the analysis, the green transition will affect blue-collar workers in two ways. Jobs are predicted to disappear from energy production, manufacturing, and transport and storage, but as a counterbalance, the transition is predicted to create significant new employment opportunities in these industries. On the other hand, it is predicted that many (typically female-dominated) occupations in the service sector will be less directly affected by the green transition.

In many studies, the net employment effects of climate change and the green transition have generally not been considered particularly dramatic compared to, for example, the effects of digitalisation and the associated increase in automation. The net effects are also typically seen as slightly more positive than negative. However, the effects that increase and decrease employment opportunities are distributed across different industries, regions, occupations and organizations in very different ways and can therefore vary significantly when examined at these levels (e.g. Busk et al. 2023; ILO 2018; Kauhanen & Kuusela 2023; McKinsey & Company 2022; World Economic Forum 2023).

In practice, it can be difficult to separate the labour market effects of climate change and the green transition from the effects of other change factors in work life. Recently, alongside the green transition, there has also been talk of the twin transition (European Commission 2023; Muench et al. 2022), which refers to the idea that that the use of digital information technology and especially artificial intelligence can play an important role in the green transition in the future. As such, the labour market effects of climate change, adaptation to it and efforts to mitigate it are partially intertwined with digitalisation.

6.2 Fear of job loss

Only three percent of respondents to the Climate Change and Work Survey stated that they were afraid that they could lose their job as a result of climate change. For men (4%), the proportion was slightly higher than for women (1%). The fear of losing one's job is also slightly and negatively correlated with age, but it was not clearly higher in any age group. There were somewhat larger differences in views according to the respondent's level of education, but even among the least educated, the proportion did not rise above five percent (Figure 6-1).

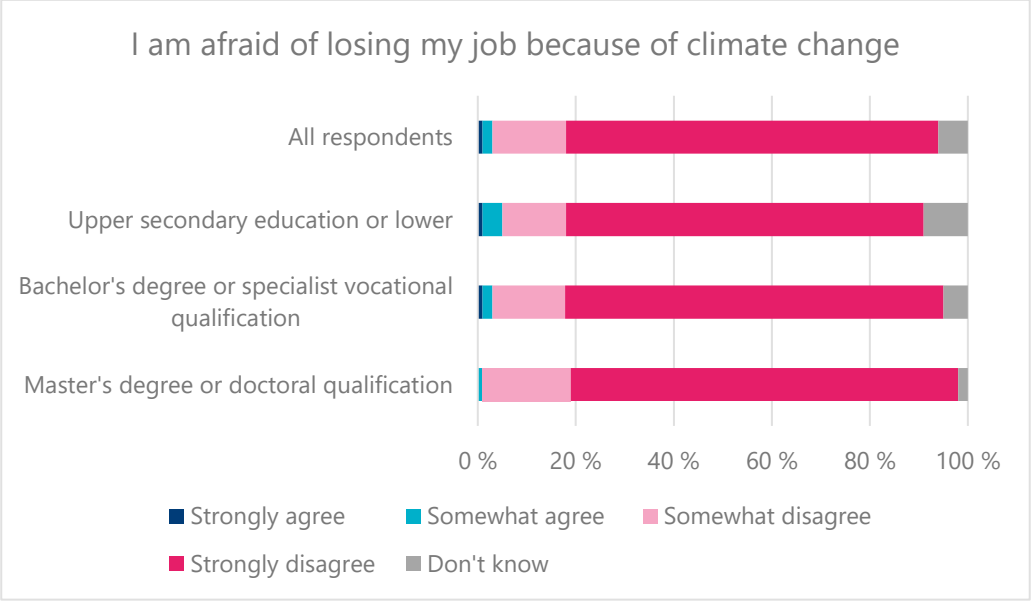

Figure 6-1 Fear of job loss as a result of climate change according to education level.

There were also some clear differences between different industries. In logistics and transport, fear of job loss was more common than in other industries. Even there, however, the proportion of those who were concerned was not higher than ten percent. Also, in manufacturing and related industries, fear of job loss was somewhat more common than the average (4%). In contrast, such fear was very rare in service-dominated industries.

6.3 Hope for new and interesting job opportunities

When looking at the flip side of the coin, i.e. the view that climate change could bring new and interesting job opportunities, the differences between respondent groups were significantly larger. More than a quarter of the respondents (27%) believed that climate change may bring such opportunities, while half had the opposite opinion. A considerable number (24%) did not take a position on the question. Men were significantly more hopeful than women. More than twice as many men as women agreed with the statement (Figure 6-2).

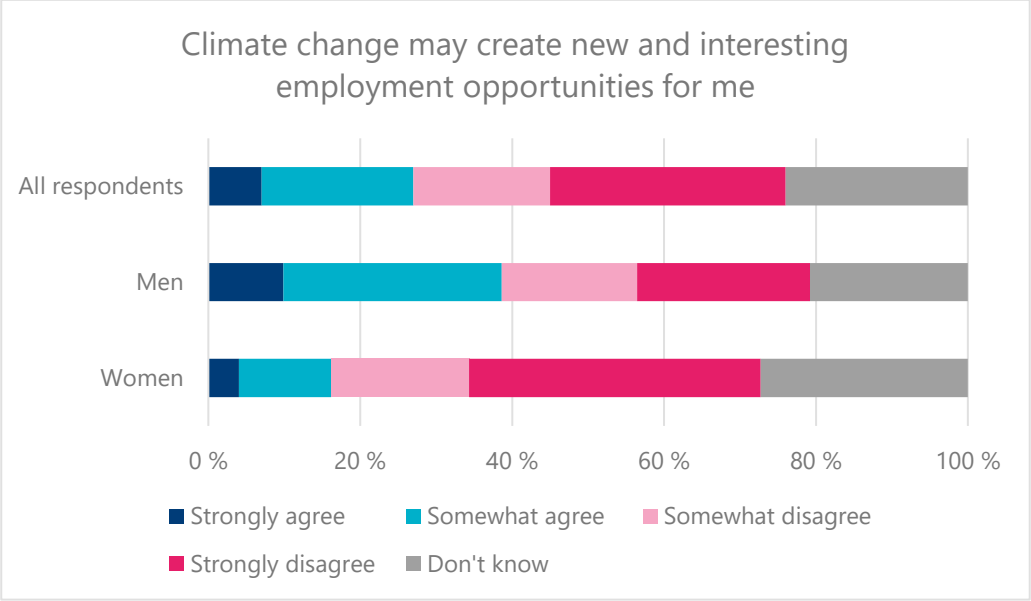

Figure 6-2 Belief that new and interesting job opportunities may be created by climate change according to gender.

The respondent's level of education was also connected to a belief that new and interesting job opportunities may arise. Twice as many highly educated people as less educated people believed such opportunities would be forthcoming (Figure 6-3).

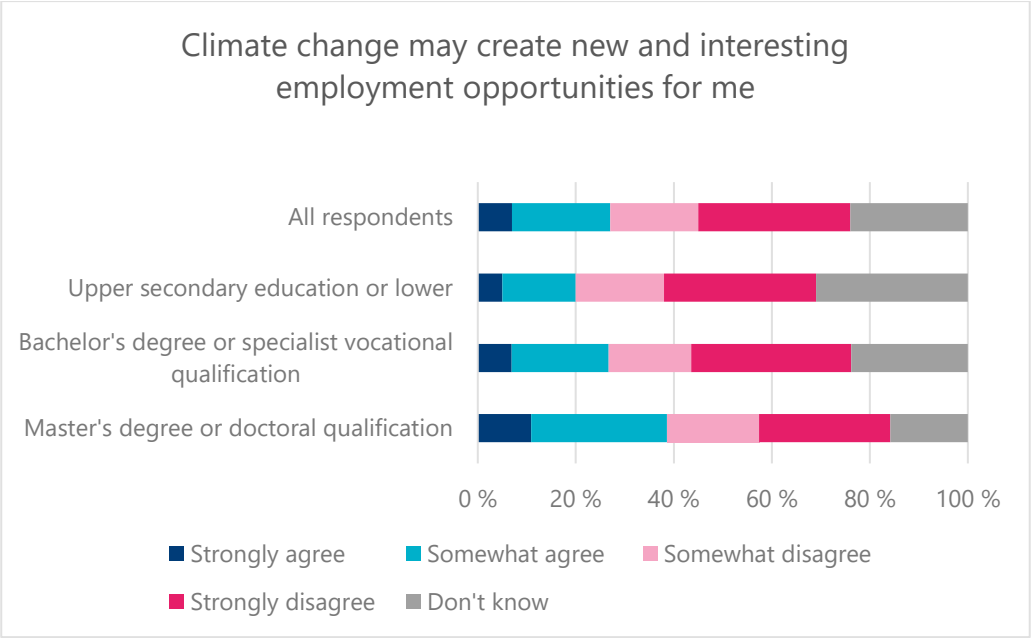

Figure 6-3 Belief that new and interesting job opportunities may be created by climate change according to level of education.

The view that positive labour market effects may result from climate change was also unevenly distributed among respondents working in different industries. Those working in the most knowledge-intensive service industries (ICT sector, financial sector and business services) were more likely to believe positive effects are possible for them (44%) than those working in other industries. Those working in manufacturing and related industries were also more likely than average to believe this (38%). There are far more men than women working in both groups, which is reflected in the aforementioned differences between male and female respondents. This result is also in line with previous studies, according to which the positive labour market effects of climate change and the national climate and energy strategy will benefit male-dominated sectors and occupations (Busk et al. 2023; Paavola et al. 2021; Seppälä et al. 2023).

Just under a fifth of the respondents (19%) believed that climate change would bring more jobs to their industry. It was also difficult for many to take a stand on this question, with one in four respondents answering "Don't know". The differences between the views of men and women were again large. Almost one in three men believed additional jobs would be created in their field, while only about one in ten women did so. Moreover, fewer female employees felt able to take a position on the issue (Figure 6-4).

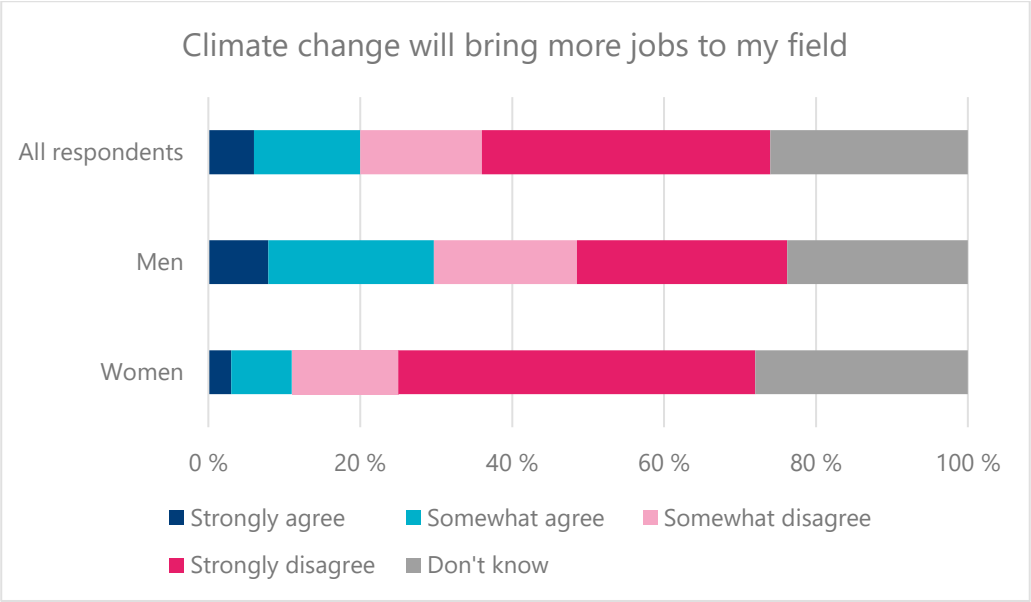

Figure 6-4 Belief that climate change would result in additional jobs in one's industry by gender.

Those working in manufacturing and related industries were most likely to believe additional jobs would emerge in their industry, with one in three workers in those fields agreeing. The second most optimistic group were those working in knowledge-intensive service industries, while the share of employees in many other service industries who agreed remained very small. For example, in retail and hospitality, many found it difficult to take a position on the matter (Figure 6-5).

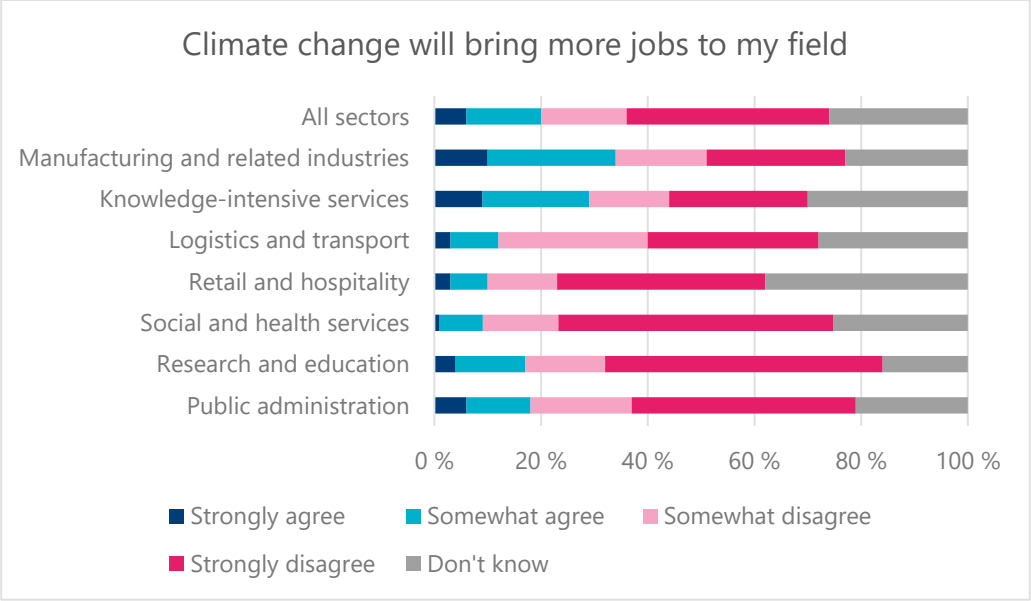

Figure 6-5 Belief that climate change would result in additional jobs in one's industry according to industry.

6.4 Discussion

Few of the respondents were worried that they could lose their jobs as a result of climate change. Climate concern does not seem to materialise strongly as a labour market concern among Finnish employees. Far more believed that climate change would bring new and interesting job opportunities. Those who believed this were more likely to be men, highly educated, and working in knowledge-intensive service sectors or manufacturing and related industries. Based on many other reports and studies, it can also be assumed that these sectors are the de facto heart of the green transition.

The overall picture of employees' attitudes to the labour market effects of climate change can be characterised in two ways. On the one hand, attitudes are more often optimistic than pessimistic. On the other hand, many do not consider that the change

will have significant or clearly visible effects for themselves or their industry. The latter observation may indicate that the effects of climate change or the green transition are not yet clearly visible in respondents' daily work or that it is generally a matter that is so difficult to visualise that it is not possible to assess the related effects.

7 Summary and conclusions

The Climate Change and Work research project started in 2020 with the aim of improving our understanding of how climate change affects work life in Finland. The role of workplace personnel in mitigating climate change and promoting the green transition has so far received little research attention, both in Finland and internationally. The research project's employee survey was designed to obtain versatile information on workplace climate actions as well as employees' own climate actions and attitudes, and their experiences and perceptions regarding the effects of climate change in their work. The survey was the first representative study of the entire wage-earning population on the topic carried out in Finland. 1917 employees responded to the survey.

Employees in Finland largely share the view that the Earth's climate is changing, while their views on how actively they themselves should act to mitigate climate change vary more. However, a positive message from the research is that many respondents have been motivated to change their working methods and ways of working, to present ideas to increase ecological sustainability in their work, and to learn more about ways to mitigate climate change. This is an important result which should be taken into account in the management of workplaces and, more broadly, in political decision-making.

Workplace activities to implement various measures to mitigate climate change and promote the green transition vary greatly. The sectors with the largest direct climate emissions in many places are at the forefront in terms of the frequency of measures. However, many respondents in all industries did not feel able to take a position on climate measures in their workplace. This suggests that in many workplaces the issues have so far not been strongly integrated into the strategy or the strategy has not been communicated effectively throughout the entire organization. This is also indicated by the observation that relatively few respondents considered that they have received training on climate change mitigation or the green transition. The exception to this is recycling, sorting and reuse, on which training or guidance is given in the majority of workplaces.

Employees do not believe that climate change will have particularly dramatic labour market effects. Very few reported being worried that climate change may lead to the loss of their job. On the contrary, more people believe that climate change could create more jobs in their field. Many of the most highly educated employees especially believe that new and interesting job opportunities will emerge for them.

When discussing the results of the survey, it should be noted that the need for the questions to be suitable for all industries and people working in all kinds of professions imposed restrictions on the content of the survey and the wording of the questions. The goal was to strive for statistical representativeness of the entire wage-earning population, which also limited the possibility of analysing the particular characteristics of certain individual industries or occupational groups with the help of the survey. More targeted studies will be needed for this in the future. The fact that conceptualisation related to the topic of climate change is in some respects still new and unestablished also caused challenges in the planning of the survey. This may have contributed to the proportion of those who felt unable to take a position on certain questions being comparatively large.

The survey's picture of the effects of climate change and the progress of the green transition in Finnish workplaces is based on the views of employees. Especially regarding climate measures in the workplace, it is important that this picture be supplemented in the future with similar information collected from employers' representatives, i.e. management. The fact that a considerable number of employee respondents felt unable to say whether their workplace has climate targets, a climate programme or a designated team or person who promotes issues related to ecological sustainability in the workplace indicates that the discussion on these issues is still in its infancy in many workplaces.

The socio-political goal of the Climate Change and Work research project was to raise awareness and stimulate discussion about the important role of workplaces in mitigating climate change and promoting the green transition among workplace management and personnel as well as policy makers, representatives of labour market organizations and ordinary citizens. The importance of this has been further stressed over the course of the project, as many reports have repeated the message that current actions will not be sufficient to achieve international climate and other sustainability goals (e.g. the UN Agenda 2030 (GSDR 2023) or limiting the global average temperature rise to 1.5 degrees as agreed in the Paris Climate Agreement (UNEP 2022). More climate action is required. In this regard, workplaces will continue to play a significant role.

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Appendix

Climate change and work survey form

Background information

1. Which of the following best describes your current status?

a) Wage earner
b) Farmer or working at family farm
c) Entrepreneur, freelancer or other self-employed
d) Unemployed or laid-off
e) Student
f) Retired
g) On parental leave
h) Other (specify)

The following questions concern your current or previous employment contract as a wage earner.

If you currently have more than one employment contract as a wage earner, please answer according to the contract you consider the most predominant.

If you currently do not have an employment contract or you are not in the labour market, please answer the questions based on your previous contract.

2. What kind of employment contract do you have?

a) Permanent contract
b) Fixed-term contract
c) Gig work or temporary agency work
d) Other (specify) _____

3. How many years have you been employed by your current employer?

- If under a year, answer zero (0)

_____ years

4. Do you work as a manager or supervisor?

- This does not include team leaders or the like who do not have actual managerial responsibilities.

a) Yes

b) No

5. What is the number of staff at your workplace?

- By workplace we mean the premises, such as a single factory, agency, institute, shop, office or building site.

a) 0-9 people

b) 10-49 people

c) 50-99 people

d) 100-249 people

e) +250 people

6. Is your employer a

a) Private company

b) Public company

c) State

d) Municipality or association of municipalities

e) University or other higher education institute

f) Third sector (non-governmental organization)

7. Which branch/sector does your employer belong to?

- Pick the most suitable one.

a) Agriculture or forestry

b) Industry

c) Construction

d) Energy or HPAC sector

e) Maintenance of properties or vehicles

f) Information technology or communications
g) Retail
h) Health, social or other well-being sector
i) Education or research
j) Accommodation, tourism, restaurant or catering industry
k) Logistics or transport
l) Business services (e.g., accounting or consultancy)
m) Finance or insurance
n) Culture, entertainment or art
o) Public administration
p) Household services (e.g., cleaning or laundry services)
q) Some other economic sector (specify) _____

Questions on climate change

8. It is argued that the world's climate is changing since its temperature has risen over the past 100 years. What is your personal opinion in this? Do you think that the world's climate is changing?

a) Definitely changing
b) Probably changing
c) Probably not changing
d) Definitely not changing
e) Don't know

9. How much have you thought about climate change before today?

a) Not at all
b) Very little
c) Some
d) A lot

e) A great deal

f) Don't know

10. Do you think climate change is caused by natural processes, human activity or both?

a) Entirely by natural processes

b) Mainly by natural processes

c) About equally by natural processes and human activity

d) Mainly by human activity

e) Entirely by human activity

f) Climate change is not happening

g) Don't know

11. To what extent do you feel a personal responsibility to try to mitigate climate change?

Assess with a scale from 0 to 10, 0 signifying that you don't feel you should mitigate at all, and 10 that you should try to mitigate a lot.

a) 0-10; 11 Don't know

12. How worried are you about climate change?

a) Not at all worried

b) Not very worried

c) Somewhat worried

d) Very worried

e) Extremely worried

f) Don't know

Climate actions at workplace

13. What is your opinion on the following claims concerning your workplace?

- Pick one option from each row.

a) At my workplace, we aim to take climate change into account in our every operation.

b) At my workplace, we have deliberately changed work practices or processes to mitigate climate change (such as reducing emissions or saving energy).

c) At my workplace, employees have been informed about planned or implemented means to mitigate climate change.

d) My workplace is a frontrunner in climate friendly operations in its field.

e) At my workplace, we use technologies that promote climate change mitigation (such as energy efficient equipment and appliances).

f) At my workplace, raw materials are used efficiently.

g) At my workplace, climate change mitigation or ecologically sustainable products or services are part of our core business.

   i. Strongly agree
   ii. Somewhat agree
   iii. Somewhat disagree
   iv. Strongly disagree
   v. Don't know

14. What is your opinion on the following claims concerning your employer?

- Pick one option from each row.

a) Climate change mitigation is important for my employer.

b) My employer is willing to use resources to mitigate climate change.

c) My employer is willing to intervene in our practices that are harmful to the climate.

   i. Strongly agree
   ii. Somewhat agree
   iii. Somewhat disagree
   iv. Strongly disagree
   v. Don't know

15. Various climate change related actions can be carried out at the workplace. Has your workplace:

- Pick one option from each row.

a) Set a climate target? (Such as carbon neutrality target or energy saving target)

b) Created an environmental or climate programme or climate strategy?

c) Developed climate-friendly practices in cooperation between the employees and the employer?

d) Established a designated job or a team for promoting measures related to climate change or ecological sustainability?

e) Arranged training on climate change or mitigation?

f) Collected information on employees' skills in environmental and climate affairs?

g) Arranged experiments or competitions on climate action?

h) Changed work practices into more climate friendly ones based on employees' propositions?

i) Given recognition or awarded employees on climate change mitigation proposals?

j) Included climate-friendly practices as part of the job orientation process?

   i. Yes

   ii. No

   iii. Don't know

16. Has your workplace drawn up instructions or arranged training that concern the following things in your work:

- Pick one option from each row.

a) Energy saving or energy efficiency

b) Recycling, sorting or reuse

c) Material efficiency

d) Use of climate change related information in your work (such as planning or decision making)

e) Working during extreme weather conditions (e.g., heatwaves or rainstorms)

f) Some other instructions or training concerning climate change or ecological sustainability, what?

   i. Yes

   ii. No

   iii. Don't know

   iv. Not relevant for my job

16_2. What other instructions or training relating to climate change or ecological sustainability has been given at your workplace? (Open ended question)

17. What is your opinion on the following statements concerning your own activity:

a) Pick one option from each row.

b) I have paid attention to energy use in my work.

c) I have paid attention to the use of materials in my work.

d) I am willing to work in co-working spaces because of climate change related reasons.

   i. Strongly agree

   ii. Somewhat agree

   iii. Somewhat disagree

   iv. Strongly disagree

   v. Don't know

   vi. Not relevant for my job

Next, we will ask about work environments. A work environment may refer to for instance an office, business premises or building site, i.e., the physical environment in which you typically work.

If you work mostly remotely, answer according to what you view is your work environment. You can also leave this question unanswered.

18. The following claims describe measures that can be done at workplaces. How do they apply to your workplace?

- Pick one option from each row.

a) At my workplace, we have well-functioning recycling systems.

b) My workplace strives for paperless operations.

c) At my workplace, there are recycled furniture, equipment or machines.

d) At my workplace, there are rented furniture, equipment or machines.

e) Climate change or the promotion of ecological sustainability has been considered in the procurements at my workplace.

f) My workplace has reduced the size of its workspaces.

g) My workplace features instructions or tips for promoting climate-friendly behaviour.

h) Climate impacts, environmental certification or energy efficiency have affected the selection of our work premises.

    i. Yes

    ii. No

    iii. Don't know

    iv. Not relevant for our workplace

19. Here we are interested in your own work and activity. Think about your daily work. What is your opinion of the following statements?

a) Climate change mitigation or the promotion of ecological sustainability has already affected the skills and knowledge needed in my occupation.

b) I have ideas on how to take climate change mitigation or ecological sustainability better into account in my own work.

c) I have already changed my daily work practices or methods to promote climate change mitigation or ecological sustainability.

d) I have already made suggestions at my workplace to promote climate change mitigation or ecological sustainability.

e) I am interested in learning more about the ways to promote climate change mitigation or ecological sustainability in my work.

f) I have thought how my work impacts the climate.

g) Acting in a climate-friendly way is easy and effortless in my work.

    i. Strongly agree

ii. Somewhat agree
iii. Somewhat disagree
iv. Strongly disagree
v. Don't know

20. At work, to what extent are you in contact with other people who are not your co-workers, such as customers, partners, patients, travellers, pupils or day-care children?

a) All the time
b) About ¾ of the time
c) About ½ of the time
d) About ¼ of the time
e) Less than 1/4 of the time
f) Not at all -> Continue to question 22

21. What is your opinion of the following claims that concern you working together with other people?

a) Working together with other people has increased my knowledge on climate change and ecological sustainability.
b) Working together with other people has brought new tasks that relate to climate change or ecological sustainability into my job.
c) Working together with other people has given me an opportunity to share knowledge on climate change or ecological sustainability.
    i. Strongly agree
    ii. Somewhat agree
    iii. Somewhat disagree
    iv. Strongly disagree
    v. Don't know
    vi. Not relevant for my job

Occupational safety and health

22. Have you discussed of the following climate change related occupational risks at your workplace?

a) Working in high temperature
b) UV radiation
c) Working during extreme weather conditions (such as floods, storms or heat waves) and their aftercare
d) Chemical or biological exposure related to the circular economy
e) Combined effects of chemical or biological exposure and heat
f) Increased slipperiness
g) Increased pollen or the elongation of the pollen season
h) Climate change related worry and mental load
i) Other (specify)
    i. Yes
    ii. No
    iii. Don't know
    iv. Not relevant for my job

22_2. What other climate change related occupational risks have you discussed at your workplace? (Open ended question)

23. Next questions concern working in high temperature at your workplace

a) Is the temperature at your workplace monitored?
b) If needed, are there personal coolers or heaters available at your workplace?
c) Can you determine your own breaks and organize your work to suit with working in high temperature?
d) Does your workplace follow the recommendations for having breaks while working in high or low temperatures?
e) Is there a cool space organized in your workplace where you can take a break during a heat wave?

f) Has your superior or occupational safety personnel paid attention to how the use of personal protective equipment (PPE) may become more difficult in hot working conditions?

g) Do you feel that hot work environment diminishes your work efficiency?

i. Yes

ii. No

iii. Don't know

iv. Not relevant for my job

24. Do you work outside at least some of your work time?

a) Yes

b) No (continue to Q26)

25. Answer to the following questions concerning working outside:

a) Does your workplace have a certain maximum level of temperature above which no work is done?

b) Does your employer give you personal protective equipment that is adapted to the season?

i. Yes

ii. No

iii. Don't know

iv. Not relevant for my job

Climate change and future

26. The following claims concern worries and future opportunities related to climate change. What is your opinion of them?

- Pick one option from each row.

a) I am worried about the negative consequences of my work on the climate.

b) My work and my environmental values are conflicted.

c) I am afraid of losing my job because of climate change.

d) Climate change may create me new and interesting employment opportunities.

e) Climate change brings more jobs to my field.

f) My workplace provides opportunities to be more active to mitigate climate change.

   i. Strongly agree

   ii. Somewhat agree

   iii. Somewhat disagree

   iv. Strongly disagree

   v. Don't know

27. What is your opinion on the following claims?

a) Aiming for carbon neutral society is important.

b) Continuous economic growth is not possible due to the limited resources of the earth.

c) Science and technological development will solve environmental problems.

d) Climate actions are also the responsibility of workplaces.

e) Means to mitigate climate change at my workplace should be more actively discussed than they are at present.

f) It is important to mitigate climate change even though it would mean re-education for me.

g) I am ready to lower my standard of living to mitigate climate change.

   i. Strongly agree

   ii. Somewhat agree

   iii. Somewhat disagree

   iv. Strongly disagree

   v. Don't know

Commuting

28. What is the length of your daily work commute?

a) I work primarily from home
b) 0-5 km
c) 6-10 km
d) 11-19 km
e) 20-39 km
f) Over 40 km
g) My work commute varies day by day

29. How do you mainly commute?

- If you work primarily from home you can leave this unanswered.

a) Walking
b) By bicycle
c) By public transport
d) By privately owned car
e) By company car
f) By a shared ride
g) Other means (specify)

30. Has your workplace used some of the following means to foster climate-friendly work commuting? Choose all means implemented at your workplace.

a) Good opportunity for working remotely
b) Guidance on daily climate-friendly work commuting
c) Guidance on climate-friendly business trips
d) Restricted work-related air travel
e) Guidance on ecological driving (If you drive to work)
f) Arranged protected space for storing bicycles
g) Given support for using public transport

h) Made parking chargeable

i) Employees have been given company bicycles or electric bicycles

j) Company cars are electric or hybrid cars

k) Bicyclists have a place to shower and change clothes

l) Something else to foster climate-friendly work commuting (specify)

m) No changes have been made to foster climate-friendly work commuting

Background information

31. What year you were born?

- Write the birth year with four numbers

_____ years

32. What is your gender?

a) Woman

b) Man

c) Other

d) Preferred not to say

33. In which province you live in?

a) South Karelia

b) South Ostrobothnia

c) South Savo

d) Kainuu

e) Kanta-Häme

f) Central Ostrobothnia

g) Central Finland

h) Kymenlaakso

i) Lapland

j) Pirkanmaa
k) Ostrobothnia
l) North Karelia
m) North Ostrobothnia
n) North Savo
o) Päijät-Häme
p) Satakunta
q) Uusimaa
r) Southwest Finland

34. What is your main place of residence?

a) Helsinki metropolitan area
b) City centre or a suburb of a city with over 100 000 residents
c) City centre or a suburb of a city with less than 100 000 residents
d) Village or rural community
e) Rural or other sparsely populated area

35. What is your education level? Indicate your highest education level qualification.

a) Primary school
b) High school diploma
c) Vocational school
d) Post-secondary education or other secondary level degree
e) Specialist vocational qualification
f) Bachelor's degree
g) Master's degree
h) Licentiate or doctoral degree
i) No educational qualification
j) Don't know

Climate change and the green transition towards an ecologically sustainable economy and growth affect work life in many ways. The report contains information on what kind of measures have been taken in Finnish workplaces in response to these changes and how employees position themselves in relation to climate change and the green transition. The data are based on the Climate Change and Work survey conducted by the Finnish Institute of Occupational Health in cooperation with Statistics Finland in 2022, with responses from 1917 employees across all sectors of the economy. The survey was the first representative study of the entire wage-earning population on the topic carried out in Finland.

Työterveyslaitos
Arbetshälsoinstitutet
Finnish Institute of Occupational Health

PL 40, 00032 Työterveyslaitos

www.ttl.fi

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