



Nordic Council
of Ministers



Nordic Future of Work Conference

Conference on Shaping the Future of Work in
the Nordic Countries – the impact of technological
development on work and skills

Stockholm

3

Nordic Future of Work Conference

The future labour market in the Nordic countries
– the impact of technological development on jobs and the
need for competence

*Sangheon Lee, Martin Ostermeier, Mark Keese, Jon Erik Dølvik,
Carola Lemne, Berit Kvam, Gunhild Wallin, Marie Preisler,
Guðrún Helga Sigurðardóttir, Marcus Floman, Björn Lindahl and
Kerstin Ahlberg*

Editors: Berit Kvam and Gunhild Wallin

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Nordens Hus
Ved Stranden 18
DK-1061 Copenhagen
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Contents

Preface	7
Summary	9
1. The Future of Work – how does technological development impact on work and the need for skills?	11
2. Opening address	13
3. Future of work and the Nordic model: lessons and new challenges	17
3.1 Introduction.....	17
3.2 The changing world of work.....	18
3.3 Major policy challenges.....	20
3.4 Lessons from the Nordic model	21
3.5 Concluding remarks: Policy challenges for the Nordic model.....	25
4. How does technological advancement affect the labour market and the need for skills?	29
4.1 The future of work in the Nordic countries	29
4.2 The future of work: opportunities and challenges for the Nordic models	51
4.3 We own the future of work.....	63
5. Summary of the conference and its four themes, speeches and debates	71
5.1 Skills are a necessary precondition	71
5.2 The future of work and the Nordic model: lessons and new challenges.....	72
5.3 Theme 1: How will the technological developments affect the labour market?	74
5.4 Theme 2: How are the Nordic countries preparing for a more digitized and automated labour market?	77
5.5 Theme 3: How are enterprises and industries affected by technological developments?	78
5.6 The future challenges and opportunities brought by technological development to the future of work.	79
5.7 Theme 4: Skills and the Future of work	88
5.8 What kind of change is needed and who should be responsible for providing new skills needed for the future labour market?	90
6. How are authorities and industries affected by the technological development and the needs for skills?	99
6.1 Digitalisation means new opportunities for Nordic employment agencies.....	99
6.2 No fish is wasted with Icelandic technology.....	102
6.3 How is new technology introduced into workplaces?.....	106
6.4 The second wave of digitalisation: the skills needed for older and unskilled workers	111
6.5 We need an informed debate about digitalisation”	116

7.	Will the Nordic model prevail?	121
7.1	Non-standard work is increasing	121
7.2	The tendencies are set to continue	124
7.3	Policy objectives for labour law reform	124
7.4	Insufficient social security protection	125
7.5	Will the Nordic model prevail?	127
7.6	The first collective agreement with platform companies.....	127
7.7	Solutions are still to be found	128
	Sammanfattning	131

Preface

The future labour market in the Nordic countries – the impact of technological development on jobs and the need for competence

The future of work – new technology, work and skills

Technological development is the engine driving a rapidly changing society. Digitalisation makes services more transparent and accessible. Automation of working tasks, robots and artificial intelligence lead to a rapid transformation in the production of goods and services. The Nordic model – with strong and independent social partners, security during times of change, and solid welfare systems – prepares the Nordic region for the rapid changes in the labour market. The future success of the Nordic model needs the social partners and politicians to cooperate in a way that facilitates the development of new competencies, skills, education and learning.

The Future of Work conference focused on how technological development impacts on work and the need for skills, and was organised by the Swedish Presidency of the Nordic Council of Ministers in cooperation with the Swedish Ministry of Employment. This was the third of a total of four annual Nordic conferences leading up to the debate on the Future of Work at the ILO's 100th anniversary in 2019.

The report from the third conference, which was held in Stockholm on 15 and 16 May 2018, was commissioned by the Swedish Ministry of Employment and has been written in cooperation with journalists from the Nordic Labour Journal, keynote speakers from the ILO, OECD, social partners and companies undergoing change.

Oslo and Stockholm, February 2019
Berit Kvam and Gunhild Wallin
Editors

Summary

The conference on the Future of Work is part of the Centenary Conversation, launched by International Labour Organisation (ILO) Director-General Guy Ryder as part of the preparations for the ILO's centenary celebrations. The conference is a Nordic contribution to the debates on the future of work, aimed at preparing for future challenges. This conference is part of a Nordic series of four (2016–2019).

On 15–16 May 2018, the Swedish Ministry of Employment hosted a conference on 'Shaping the Future of Work in the Nordic Countries – the impact of technological development on work and skills'. The conference contributed to an ongoing Nordic project, in which conferences on the Future of Work have been held in Helsinki (2016) and Oslo (2017). Iceland hosted the fourth and final conference in April 2019.

The Stockholm conference mainly focused on the question of how technological development, i.e. digitalisation, robotisation and automation affect the future of work and what consequences this will have regarding the need for skills and lifelong learning. Technological and demographic trends, climate change and globalisation all alter our working life. However, the future is not predestined by technical or socio-economical megatrends; it can in fact be shaped. Robots and artificial intelligence (AI) can create growth in the Nordic countries without increasing unemployment, and under the right conditions the Nordic countries can become digital frontrunners.

The conference identified some of the methods that can be used to address technical developments. Lifelong learning was one of them. However, participants pointed to the need for change in the educational system – for young people, professionals and the elderly. The importance of improving the gender balance in STEM subjects (science, technology, engineering and mathematics) by encouraging more girls and women to choose these paths was emphasised. Also, examples were given of how private businesses and the public sector work in order to master new technology and improve competitiveness and welfare. At the same time, participants mentioned the risk of lower union-level organisation and how this may have a negative impact on the Nordic model. Furthermore, the risk that digitalisation may contribute to the polarisation of jobs and education was also highlighted, along with the possible strain

on social insurance as a result of reduced employment rates. Several people also pointed out how the Nordic countries have succeeded in handling many vast technical changes through cooperation and social dialogue between different actors, meaning that change can be embraced quickly if people can see the long-term benefits of developments.

1. The Future of Work – how does technological development impact on work and the need for skills?

The Nordic conference on technological development and how technology impacts on work and the need for skills was held in Stockholm on 15 and 16 May 2018. This was the third in a total of four annual Nordic conferences exploring the challenges related to “The Future of Work” in the runup to the International Labour Organization’s 100th anniversary in 2019.

The Nordic conferences on “The Future of Work” are part of The Centenary Conversation, launched by ILO Director-General Guy Ryder as part of the preparations for the ILO’s centenary celebrations. The conferences are a Nordic contribution to the debates on the future organisation of the ILO, aimed at preparing the organisation for future challenges.

The first Nordic debate was “Nordic Future of Work Conference – The Future of Work and New Forms of Work from the Global and the Nordic Perspectives” and was held in Helsinki on 5 and 6 September 2016. The second debate was “Shaping the Future of Work in the Nordic Countries – the Impacts of the Sharing Economy and New Forms of Work” and was held in Oslo on 22 and 23 May 2017. The third debate was “Shaping the Future of Work in the Nordic Countries – the impact of technological development on work and skills” and was held in Stockholm on 15 and 16 May 2018.

This conference was organised by the Swedish Ministry of Employment. The conference programme was drafted in consultation with the Swedish tripartite ILO Committee and other relevant stakeholders. The Nordic Institute for Advanced Training in Occupational Health (NIVA) was responsible for the practical arrangements. The conference was moderated by Darja Isaksson.

This report is a compilation of conference contributions combined with journalistic articles on relevant topics and debates that focus on the four key themes of the conference:

1. How will the technological developments affect the labour market?
2. How are the Nordic countries preparing for a more digitalised and automated labour market?
3. How are companies and industries affected by the technological developments?
4. How does the technological development influence the need for skills?

2. Opening address

15 May 2018

Ylva Johansson,
Minister for Employment and Integration

We face change on a large scale, affecting the whole of society. At this conference, the focus will be on reorganisation and other changes in working life.

My starting assumption is that things can get very much better. I believe that the changes ahead offer opportunities for a better society, better welfare provision and better working life. But that is of course assuming that we take advantage of those changes, and also that we protect ourselves from the risks which change entails.

There are differences between the Nordic countries, but it is possible nevertheless to talk of a Nordic labour market model, which could be said to rest on three pillars:

The first pillar is the fact that we have strong and independent social partners who regulate much of the labour market themselves. Large areas of our labour markets are covered by collective agreements. The social partners can themselves regulate not only wage formation, but also many other elements that shape the way the labour market operates. The assumption is that this makes for greater flexibility than if the market were governed by legislation. Legislation involves more inertia and, what is more, is the same for everyone, whereas collective agreements are sector-based and can be changed more quickly.

The second pillar is the good level of protection we have when it comes to labour market transitions. This includes labour law, unemployment insurance, an active labour market policy and training opportunities. Someone who loses their job has a chance of moving on quite quickly to another one, and can also reckon on support from society as they make that transition. Our countries have slightly different systems, but compared, for instance, with other nations in Europe, the Nordic labour market model offers strong transitional support, and that is one of the reasons more people carry on working longer in life in the Nordic countries.

The third pillar of the Nordic labour market model is not really about the labour market as such, but rather about welfare: the fact that we have strong welfare systems and that welfare – in the shape of health care, parental and sickness benefits, education and much more besides – is not linked to your job, but is a right you have as an individual. In countries where welfare provision is linked to employment, mobility is reduced, as employees risk losing more when they no longer have a job.

I would say that these three pillars of the Nordic labour market model are important and provide us with a good starting point for managing change and transition.

When the European Working Conditions Survey, conducted in 2015, asked the question whether, during the last three years, there had been a restructuring or reorganisation at the workplace that had substantially affected respondents' work, the Nordic countries were out in front when it came to answering "Yes" to the question. A process of change, in other words, is already more clearly under way in the Nordic region than in other countries of Europe. In the same survey, the Nordic countries also came out on top as regards people learning new things at work.

Another finding of the survey was that people in the Nordic region are more likely than in other parts of Europe to have a trade union, works council or similar body at their place of work representing employees.

An earlier European Working Conditions Survey in 2010, moreover, showed that individuals in the Nordic countries were more used to new technologies and processes being introduced in connection with restructuring. The 2015 survey confirmed this, showing that the Nordic region stands out in terms of the proportion of employees who report having learnt new things in connection with restructuring at their place of work.

It can thus be concluded that, in the Nordic countries, we are well equipped for change and reorganisation, compared with other countries of Europe. The Nordic labour markets are already more engaged than others in processes of change and reorganisation involving the use of new technology and new knowledge.

Employees, trade unions and society at large in the Nordic countries have long embraced new technology and the pursuit of an open economy. This has to do with the fact that people do not need to fear for their own personal situation when changes occur, and perhaps even feel that change can help improve their working situation.

But it is important to remember that we will not automatically cope with future change simply because we have coped well so far. It is my hope that this conference will help provide a better understanding of how future change can be managed and what politicians need to do to equip us better to face it.

I would like to highlight a number of things which I believe are already important:

1. Skills development for everyone who has a job.

We are relatively well equipped in the Nordic region for individuals who lose a job and have to make the transition to a new one. But a great many people are not primarily afraid of unemployment, but rather have a feeling that their current conditions at work are not sustainable in the long term. They feel that something has got to change, or alternatively that there will be pressure for change at work which they feel ill-equipped to handle. Here I think we will need to see new policies being adopted. Skills development can be divided into three components. First, we have the kind of skills development that is essential to doing the job you have. That is the employer's responsibility. In Sweden, we can see that this form of skills development is declining. Employers are investing less in necessary development of skills, even though all the indications are that the need for it is growing. Then we have skills development for which the motivation is entirely individual. Here, the design of the education system is very important. The lion's share of skills development, finally, is the kind that is of use to you in your job, but could also result in a new job. Who is to pay for that? Employers are unwilling to pay if it could lead to the employee moving on to another employer. On the other hand, the individual can scarcely afford to meet these costs. This is an area in which I believe we need to find new approaches. It is not enough to be equipped to adapt when you lose your job. You also need to be equipped to adapt during the time you are working. Here we will need to develop new systems.

2. The second challenge is a growing proportion of multi-employed individuals, that is, people who earn their income from several different sources. This may involve working in the platform economy, or being part self-employed, part employee. Different combinations in working life are on the increase. This is also, I believe, linked to the need for more skills development. It is not just for four years of our youth that we work and study in parallel; that is going to be the case throughout our working lives. We also see this at the end of our working lives: more people wanting to work for longer, but perhaps to combine jobs in new ways. And we see the same tendencies with families: again, more people want to combine jobs in new ways. Here it is important that our social security systems and legislation are able to keep up and support these kinds of combinations in working life.

3. The third thing I want to draw attention to is that, for there to be public support for these changes, we have to be able to distribute fairly the prosperity arising from productivity growth, new technology and globalisation. If not everyone is able to share in that prosperity, we will instead see resistance to change. This I think has been one of the keys to why so many people in the Nordic countries embrace new technology, namely that care has been taken to ensure that it has contributed to greater prosperity for all – through the welfare system or through good growth in pay. And this will remain important.

To conclude, I would like to highlight a challenge that is particularly great in Sweden. That is that we need to face these changes in the labour market at the same time as the composition of the workforce is changing very markedly.

Today, individuals born abroad make up over 20% of Sweden's workforce. We have no transitional unemployment in Sweden, we just have integration-related unemployment. This has to do with the difficulties which individuals new to Sweden, or perhaps with an educational background not at all in keeping with what is normally required there, experience in gaining a foothold on the Swedish job market. This means that several dimensions need to be taken into account if we are to cope with the changing composition of the workforce.

I see this primarily as a positive problem, as we are faced at the same time with a demographic challenge. We are living ever longer. But that also means that we need an injection of young people and people of working age if we are to solve the demographic puzzle. In Sweden we have the piece of the puzzle that we need to do that, but we also need a labour market policy that ensures that we can make full use of these people, as participants in society and in the labour market.

3. Future of work and the Nordic model: lessons and new challenges

Sangheon Lee,
Employment Policy Department

Martin Ostermeier,
Office of the Deputy Director-General for Policy
International Labour Organization

3.1 Introduction

Recent years have witnessed intense debates on the future of work. In the beginning these debates highlighted negative employment impacts of new technologies (e.g. automation and digitalisation), sometimes dramatized by the overly pessimistic prediction of job losses (ILO, 2017a). Since then a more balanced view has emerged that considers both the aspects of job destruction and job creation that are associated with technological changes. At least at the aggregate employment level, there seems to be no strong evidence of significant magnitude of *net* job losses that can be attributed to technological changes (ILO, 2018g).

However, this does not justify policy complacency about the future of work. Rather, the debates clearly show the need for tackling the issue in a much broader and comprehensive manner, particularly by considering other profound structural changes such as shifts in demography and labour market institutions and by examining job quality and distribution of income and jobs. While the future of work involves much uncertainty, it is safe to predict that if we continue to follow the current path of economic development, job polarisation and excessive income inequality, driven by

skewed distribution of productivity gains, will remain as a defining feature of our future (ILO, 2018e). This may have serious social and political consequences.

The future is new by definition, but much can be learned from the recent past in which the world of work confronted similar (if not identical) challenges and opportunities and embraced adaptation and adjustments. The Nordic model is a good example which shows that these new circumstances can be best addressed jointly by social partners and the government. More specifically, the model has demonstrated how all major aspects of work (i.e. quantity, quality and distribution) can be addressed in an integrated and coherent way and how such a system can be adaptable and resilient while responding to new challenges actively through effective social dialogue.

This paper intends to examine what lessons we can draw from the Nordic model in the context of global debates on the future of work. It first outlines the changing world of work and identifies the key policy challenges, with a particular focus on the Nordic countries. It further highlights some lessons learnt from the Nordic model and concludes by showing how the Nordic countries respond to the emerging challenges of the future world of work.

3.2 The changing world of work

A wide range of factors are shaping the landscape of the world of work, including technological, demographic and climate change, as well as globalisation. In order to harness the full potential of these megatrends, it is important to understand their functional chain and impact.¹

Technological change is one of the most prominent topics in the context of the future of work and is the subject of lively debates in many countries, including the Nordics. New technologies open up opportunities to enter new and fast-growing sectors, and, as a result, for stronger and more dynamic economies. They also offer new innovative ways of working and thus new working opportunities for people who have been denied access to the labour market, for instance, for health and family reasons. At the same time, as we know, new technologies affect the functioning of labour markets and challenge the effectiveness of existing labour market institutions, with far-reaching

¹ The ILO Secretariat to the Global Commission on the Future of Work has compiled a series of both Issue Briefs and Research Papers to stimulate the discussion on a selected number of issues around the four megatrends. See <http://ilo.org/fow>

consequences for the number of jobs, their quality and the diversity of the opportunities they offer (ILO, 2018g). In short, new technology itself brings both opportunities and risks, and the final outcome depends much on how we manage the needed transition for businesses and workers through effective policies.

Another decisive factor for the future of work is climate change. New opportunities are also emerging from the global effort to move towards a green economy, as outlined in the 2015 Paris Agreement. ILO shows that such global actions may lead to significant job losses in carbon intensive industries, but this will be offset by the creation of 24 million new jobs globally by 2030 (ILO, 2018h). These new opportunities will be mainly the result of the adoption of sustainable practices, including changes in the energy mix, the projected growth in the use of electric vehicles, and increases in energy efficiency in existing and future buildings. However, these job gains are potential and can materialize through our sustained policies for ensuring a just transition for all involved (Montt, Fraga, and Harsdorff, 2018).

Demographic change is generating two different types of debates. While policy makers in many emerging and developing countries are searching for the right tools to harness the full potential of the large number of young people pushing into the labour market, their counterparts in developed countries, such as the Nordic countries, are facing a situation of ageing societies in conjunction with a shrinking labour force. Although an ageing population might present new employment opportunities, for instance in the care economy (ILO, 2018a), it will place an increased strain on the active workforce, who will be expected to sustain social security systems (pension and healthcare schemes in particular) upon which the growing number of retired workers rely (Behrendt and Nguyen, 2018; ILO, 2018d).

The sustainability of the generous social welfare system is also put under pressure by globalisation. While the entitlements of the public welfare system are granted to individuals, the financial burden of the system is borne by the collective and financed through taxes. An increasing globalisation of the economies also leads to a stronger labour mobility. After having benefitted from the educational entitlements, well-educated graduates from Nordic universities oftentimes migrate to other countries. After having paid a large share of their taxes abroad, they return to their home countries for their retirement and benefit again from the welfare system (Andersen et al., 2007). Another aspect of globalisation is the change in the global production pattern, with significant impacts on enterprises and employment. The fragmentation of production into tasks and activities, and the expansion of global value chains,

reduced trade and transportation costs and led to an offshoring of production from countries with high wage levels towards low-wage countries (ILO, 2018c). This shift in production increases the pressure on social security systems, while at the same time decreases tax revenues.

3.3 Major policy challenges

Today's labour markets require an increasing level of flexibility and mobility of workers. However, changing jobs – especially involuntarily – may be extremely stressful and often risky. People worry about unemployment, low pay, job insecurity or the need to move home. Political leaders and policy makers should not underestimate these financial and social (even emotional) costs of transition. They need to be responsive to them and provide all necessary support to ensure that people can transition within the labour market and are prepared for the full range of life contingencies.

It is thus important to bring individuals back to the centre stage of the political arena and to call for a comprehensive investment in people. Firstly, we need to invest in the training of people in order to ensure their employability over a lifetime. This implies the equipping of the workforce with both technical skills that can facilitate problem-solving and innovation, as well as specific vocational skills that will be required to deploy, operate and maintain new technologies. Since a single lifetime qualification will no longer be sufficient, training systems of the future must be flexible, ensure the portability of acquired skills, and prepare the workforce to continue learning throughout their life cycle. The investment in such a lifelong learning system is huge and cannot be borne by a single party alone; rather it requires a collective effort and coordinated action by all partners. Governments need to consider taking the lead in designing modern lifelong learning systems in close consultation with workers and employers – the actors and key beneficiaries of the system (ILO, 2018f).

Secondly, we need to invest in social protection systems and ensure universal social protection for all. Changes on the labour markets bring new challenges, such as an increasing number of workers in non-standard forms of employment. Workers in these types of employment – women in particular – often enjoy lower levels of social protection. Coordinated policy responses are required to ensure that protection mechanisms are better adapted to the circumstances and needs of this growing category of workers. Moreover, social protection systems need to be adapted to the

requirements of ageing societies triggered by the demographic change. Greater emphasis on tax financing of public social protection systems will be necessary in the light of the higher demands and should be complemented with incentives for private provisions (Behrendt and Nguyen, 2018; ILO, 2018d).

Thirdly, we need to invest in the people's voice, particularly in social dialogue. This is the best way of building common visions and working together for a better future of work. Governments and international organisations need to identify the obstacles which hinder social dialogue and address them with targeted investment. In this context, workers and employers' organisations have to join forces to find ways to ensure an effective representation of the growing number of workers in new forms of employment, such as the platform workers in the sharing economy (Johnston and Land-Kazlauskas, 2018; Dølvik and Jesnes, 2018).

Lastly, we need to increase our investment in the modernisation and strengthened capacity of labour market institutions to facilitate the transition of workers within the labour market. New technologies, such as artificial intelligence and big data, are expected to improve the functioning of the labour market. They can serve as forecasting tools and hence mitigate the risks of skill mismatches and long-term unemployment. Public employment services need to be equipped with such technologies in order to respond quickly to a changing demand and to increase their overall efficiency in the placement of workers.

3.4 Lessons from the Nordic model

Interestingly, these three aspects of "investing in people" constitute major pillars of the Nordic model, which includes Denmark, Finland, Iceland, Norway and Sweden.² It is characterised by a comprehensive welfare system that provides tax-financed transfers and social services to households and individuals, while fostering free and open markets. It allows for flexible staff management in companies, while promoting workers' and employers' organisations to pursue collective bargaining and social dialogue.

² Our discussion is limited to Denmark, Finland, Iceland, Norway and Sweden. Their associated territories Greenland, the Faroe Islands and the Åland Islands are excluded, mainly due to data constraints.

It is important to note that the Nordic model was once questioned by many. In 2006, the *Economist* observed that

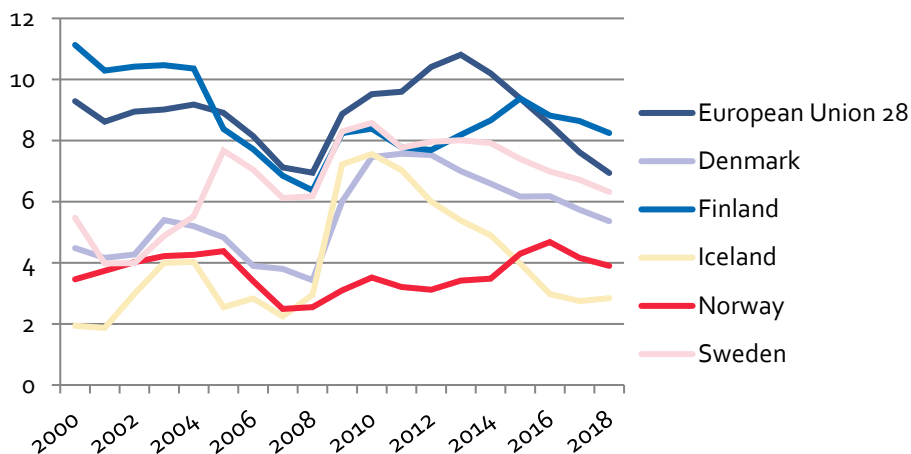
"it is widely thought that the Nordic countries have found some magic way of combining high taxes and lavish welfare systems with fast growth and low unemployment. And it is certainly true that, over the past decade, the region's economies have been doing a lot better than most of the rest of Europe's. Yet the belief in a special Nordic model, or 'third way', will crumble further in 2007. As so often, the model has always looked a lot better from abroad than it ever did at home."

(The Economist, 2006)

Similar scepticism about the Nordic model was also strong and was widely shared in the 1990s when the viability of institutional "rigidity" (i.e. comprehensive social and labour market protection) was under strain.

Such predictions turned out to be unfounded. Nordic countries perform better in terms of labour market outcomes, income distribution and social cohesion, also with regard to the aftermath of the economic crisis of 2008/09 (Calmfors, 2014). Figure 1 shows that all Nordic countries experienced a sharp increase in unemployment during the financial crisis, but the rates remained well below the European average and the countries recovered much quicker. For other employment, social and economic indicators, the performance of the Nordic countries has consistently ranked high.

Figure 1: Unemployment rate in the Nordic countries



Source: ILOSTAT.

Why did the model turn out to perform better than expected? There are a wide range of factors which can explain the strength of the model, but it is safe to say that recent experiences have proven the economic value of “investing in people.” For instance, the Swedish economist Jonas Agell (2000) argued that the view of labour market institutions and social protection as an outcome of “rent-seeking” by “insiders” at the expense of “outsiders” (hence reducing “flexibility”) was incomplete and misleading. This view, which challenges the very foundation of the model, ignores the social insurance function for uninsurable and growing risks in a rapidly changing world of work. He said that

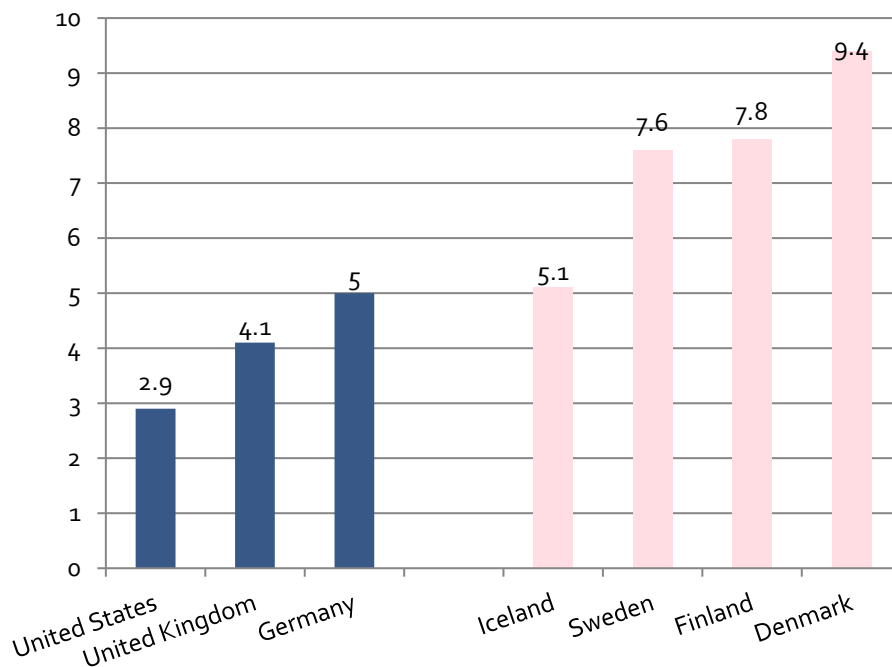
“globalisation and the ‘new economy’ will force countries to make their labour markets more flexible. These phenomena will probably increase the efficiency costs of existing institutions, but they may also make voters more willing to pay a high premium to preserve institutions that provide insurance.”

(Agell, 2002, p. 2)

When income security is provided through these institutions, people are more encouraged to face changes confidently, to take new risks and to make themselves adaptable. These changes will facilitate the transformation of the labour market and the economy, hence enhancing economic efficiency. It is also worth stressing that such insurance against growing and diversifying risks needs to be provided not just through social protection (more generally, the welfare state) but also through labour market institutions, notably industrial relation systems and wage determination mechanism.

This efficiency-enhancing function of investing in people has been maintained, often with adaptation and innovation. For instance, the Nordic countries have continued to expand their investment in social protection in recent years, keeping the overall level of social protection expenditure at relatively high levels compared to other developed countries (Figure 2). This has been accompanied by the strong labour market institutions that have maintained wage and income inequality at relatively low levels and by efficient education and training systems that have continued to make broadly-based investments in human capital for the benefit of all. These investments have eventually paid off in better economic and employment performance.

Figure 2: Public social protection expenditure on benefits as a percent of GDP (%)

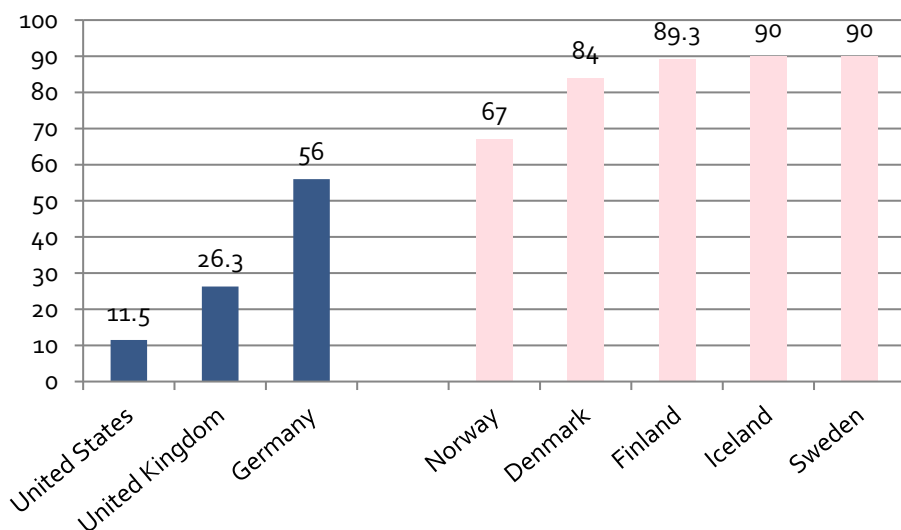


Note: Population aged 15+, data for the most recent year available.

Source: ILOSTAT.

The importance of social dialogue in the Nordic countries, especially coordinated collective bargaining systems, should be noted. Figure 3 illustrates the significantly higher coverage rate of workers whose working conditions are determined by collective agreements in comparison to other developed countries. As the Organisation for Economic Co-operation and Development (OECD) concluded, these strong systems “are associated with higher employment, lower unemployment, a better integration of vulnerable groups and less wage inequality than fully decentralized systems” (OECD, 2018, p. 110).

Figure 3: Collective bargaining coverage rate (%)



Note: The collective bargaining coverage rate conveys the number of employees whose pay and/or conditions of employment are determined by one or more collective agreement(s) as a percentage of the total number of employees.

Source: ILOSTAT.

Therefore, as Gylfason *et al.* (2010) noted, “the Nordic welfare state, the labour market institutions and the educational system are not the source of current problems. Quite the contrary, the Nordic model, rightly implemented, is part of the solution” (p. 30). Interestingly, after years of scepticism, the *Economist* recognized the Nordic model as “the next supermodel” and predicted that “the world will be studying the Nordic model for years to come” (The Economist 2013).

3.5 Concluding remarks: Policy challenges for the Nordic model

While the Nordic model has been resilient and adaptable, history also tells us that previous success does not guarantee future success. The model is also faced with the profound changes we discussed above. Climate, technologic and demographic

changes, as well as globalisation and migration are some of the major forces that are expected to affect the future of work in Nordic countries. An ageing population places increasing pressure on the generous welfare spending and puts the sustainability of its public financing to a serious test. The relocation of production and the replacement of workers by machines are distinct features of globalisation and technological advancement that are increasing the pressure on the welfare state and which may force countries to restructure their economic model. Moreover, the emerging new forms of (non-standard) employment allow for more flexibility in the delivery of goods and services, but also require a rethinking of current regulation, taxation and competition standards, as well as their representation by social partners.

Several Nordic countries have recognized the need to analyse the potential changes in the future world of work and to adjust their policies accordingly. A joint Nordic research project on the future of work is studying what working life will look like in the Nordic countries in 2030. In addition, several national initiatives have been launched. Denmark, for instance, established the Disruption Council “A partnership for Denmark’s future” to assess the potential and the challenges of new technologies. The Council unites ministries, social partners and representatives of society. In a similar composition, the “Future Competences Panel” of the Finnish Ministry of Education and Culture is exploring the ability of the current educational system to deliver the competences that will be required in the future. Their focus is on skills to manage new technologies. Following its long tradition in social dialogue, the Swedish government launched the “Global Deal for Decent Work and Inclusive Growth” initiative. This multi-stakeholder partnership has the objective of jointly addressing the challenges in the global labour market by harnessing the potential of social dialogue and sound industrial relations as instruments for promoting decent work and job quality. It was launched in 2016 as a direct contribution to the UN 2030 Agenda for Sustainable Development and has been developed in cooperation with the ILO and the Organisation for Economic Co-operation and Development (OECD).

It is hoped that the Nordic model will be able to demonstrate its resilience through continued adaptation and innovation, while maintaining and further strengthening its key principle of “investing in people”. By so doing, the world will be able to continue learning from the ongoing success of the Nordic model.

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4. How does technological advancement affect the labour market and the need for skills?

4.1 The future of work in the Nordic countries

Mark Keese,
OECD³

A number of megatrends are hitting the world of work at the same time. These include the digital revolution, globalisation and rapid population ageing, which are all having a profound impact on the types of jobs that are being created and how and where they are performed. This paper examines the challenges confronting the Nordic countries from a comparative perspective and the broad policy responses that will be required. In many cases this will not require a complete paradigm shift but will instead require adaptation and strengthening of existing policies.

4.1.1 Introduction

As in other OECD countries, labour markets in the Nordic countries are being buffeted by a number of megatrends, including technological change, globalisation and population ageing. The confluence of these trends has raised concerns about the speed and magnitude of the changes that are occurring in the world of work. These concerns have centred around the number of jobs that could be destroyed as a result of automation and the impact of the emergence of new forms of work on job quality. The

³ This paper represents the views of the author only and does not necessarily represent those of the OECD or its Member Countries. The author would like to thank participants at the conference on "Shaping the Future of Work in Nordic Countries", Stockholm, 15 May 2018, and his OECD colleague, Stijn Broecke, for their helpful comments.

objective of this paper is to provide a comparative overview of the policy challenges for the Nordic countries in shaping a future of work that is inclusive and centred on good quality jobs. It starts by briefly reviewing the nature of the megatrends affecting the Nordic countries (Section 1) and their impact on the labour market (Section 2). This is followed by a discussion of the policy responses that will be required in terms of social protection, employment regulation and the development of skills (Section 3). A final section provides some conclusions.

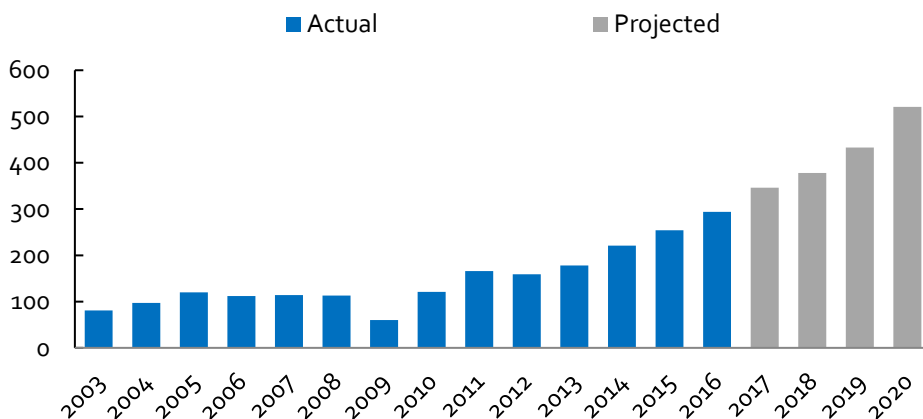
4.1.2 *The megatrends shaping the future of work*

Digitalisation, globalisation and rapid population ageing are having a profound impact on the labour market in all OECD countries. However, the speed and magnitude of these trends differ across countries, with some notable differences between Nordic and other OECD countries. Other factors, such as climate change mitigation policies, changing consumer tastes and work preferences, may also be amplifying the impact of these trends on the labour market but these are not considered here.

4.1.3 *Technological progress*

Technological progress has been a key driver of change in the labour markets of all OECD economies since the first industrial revolution and has resulted in considerable gains in productivity and living standards. However, recent advances in digital technologies, especially in Artificial Intelligence (AI), have widened considerably the range of job tasks that can be potentially automated, including tasks that were previously considered to be the preserve of humans. The use of robots has been the most visible sign of job automation and there has been an acceleration over recent years in the global supply of industrial robots (Figure 4). However, the number of installed industrial robots per manufacturing employee varies considerably across countries, and is lower in the Nordic countries than in leading manufacturing countries such as Germany, Japan and Korea (Figure 5). This probably reflects differences in the structure of manufacturing, but suggests that further job losses could occur in the Nordic manufacturing industry as automation proceeds.

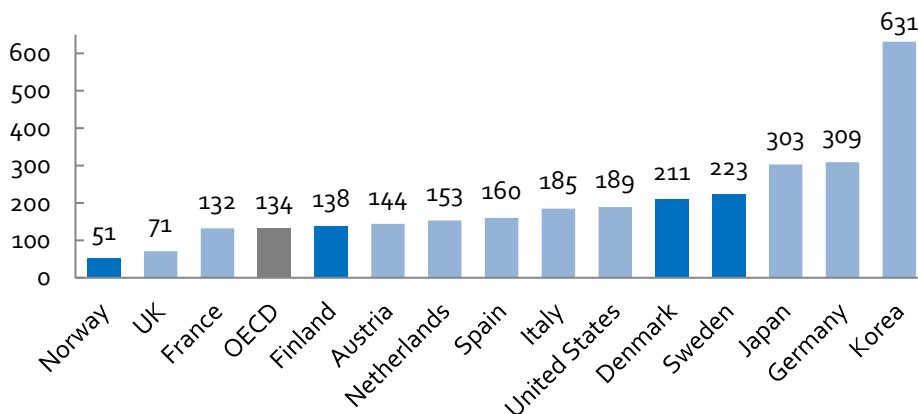
Figure 4: The robots are coming: Panel A. Estimated annual worldwide supply of industrial robots



Note: Thousands of units.

Source: International Federation of Robotics, *World Robotics*, 2016 and 2017 editions.

Figure 5: The robots are coming: Panel B. Installed industrial robots per 10,000 employees in manufacturing, 2016



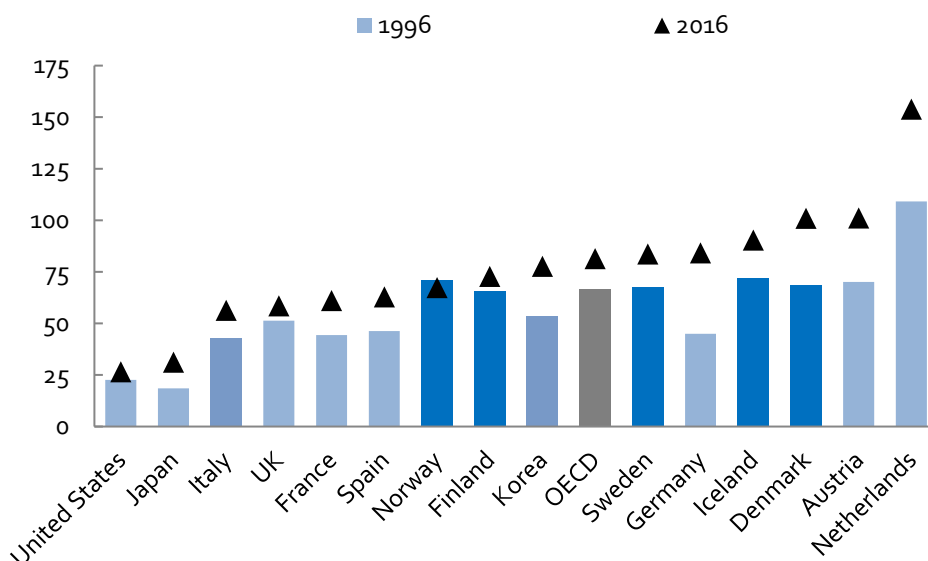
Note: Thousands of units. The OECD average in Panel B is the median of all OECD countries, excluding Chile, Iceland, Ireland, Latvia, Lithuania and Luxembourg.

Source: International Federation of Robotics, *World Robotics*, 2016 and 2017 editions.

4.1.4 Globalisation

Changes in the labour market are also occurring because of increased international competition and trade. The production of goods and services within national economies has become less dependent on local demand and increasingly linked to foreign demand and international supply chains. As small open economies, the Nordic countries are no exception to this trend. Trade as a proportion of GDP has increased in all of the Nordic countries except for Norway. (Figure 6). The rapid fall in the cost of communication and transportation has promoted the integration of supply chains across countries and has facilitated an accelerated pace of technological dissemination. Greater international competition has itself also driven companies to adopt new technologies and methods of production. This has been of particular importance in the Nordic countries, where high labour costs relative to other countries has spurred efforts to increase labour productivity in order to remain internationally competitive.

Figure 6: The world economy has become more integrated



Note: Exports plus imports as a % of GDP. The data for the OECD represents the median of all OECD countries.

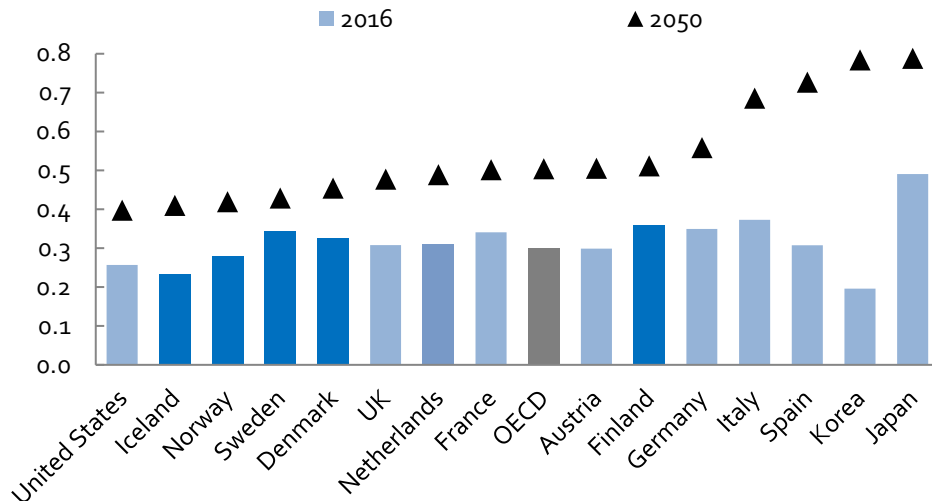
Source: Author's calculations based on OECD National Accounts data.

4.1.5 Rapid population ageing

Rapid population ageing is also occurring in nearly all OECD countries and is raising concerns about the sustainability of public finances and future increases in prosperity. However, because of relatively high fertility rates in the Nordic countries, population ageing is not projected to be as severe in these countries as it is for Germany, Italy, Japan and Korea (Figure 7). Nevertheless, as social spending is already high in the Nordic countries relative to GDP, it may be difficult to accommodate further increases in spending as the number of older retired people rises relative to the number of people in work.

In addition, population ageing will lead to important reallocations of labour and resources across sectors and occupations as demand shifts from durable goods (such as cars) towards services (such as health care). It will also result in a drag on economic growth as the labour force grows more slowly. A key policy response will be to encourage later retirement and a longer working lifespan. However, with the notable exception of Finland, there is less scope to do this in the Nordic countries than in other countries because employment rates for older people are already relatively high (Figure 8).

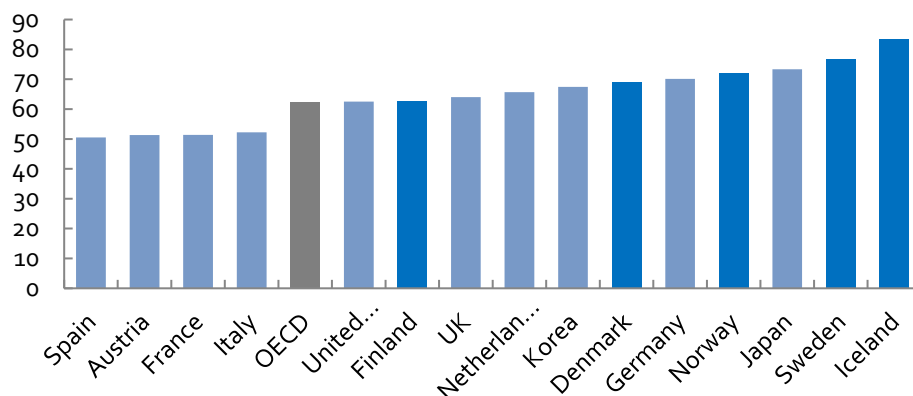
Figure 7: Populations are ageing rapidly: Panel A. Old-age dependency ratio (ratio of population aged 65+ to population aged 20–64)



Note: The data for the OECD represents the median of all OECD countries.

Source: OECD Database of Population and Labour Force Projections.

Figure 8: Populations are ageing rapidly: Panel B. Employment rate of people aged 55–64 (%), 2017



Note: The data for the OECD represents the median of all OECD countries.

Source: OECD (2018a), OECD Employment Outlook 2018, <http://dx.doi.org/10.1787/8889333778915>

4.1.6 A changing world of work

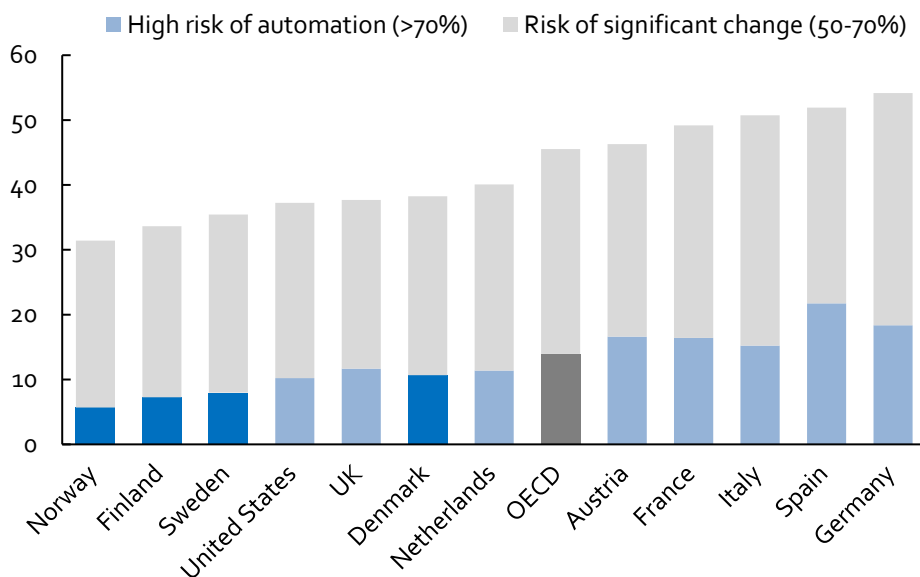
An international perspective provides a useful way of assessing how deeply labour markets in Nordic countries are being affected by these megatrends. In particular, an assessment is made of how labour markets are changing with respect to: (i) the risk of job loss; (ii) the skills that workers require; and (iii) new forms of work.

4.1.7 The risk of job loss

Of all the mega-trends, the digital revolution has been the focus of most concern because of the potential for large employment losses as a result of automation. For example, it has been estimated that 47% of all persons employed in the US are currently working in jobs that could be performed by computers and algorithms within the next 10 to 20 years (Frey and Osborne, 2013). Similar estimates for EU countries suggest that the share of jobs susceptible to automation ranges from between 45% to more than 60% (Bowles, 2014). However, more recent estimates by the OECD (Nedelkoska and Quintini, 2018) suggest that the risk of automation is much lower once account is taken

of: *i*) the range of tasks that are performed within each occupation, and *ii*) the significant differences in these tasks between workers in the same occupation. Taking this task-based approach, it was estimated that only 14% of jobs faced a high risk of automation across the 28 OECD included in the study (Figure 9). This proportion is even lower in the Nordic countries, ranging from under 6% in Norway to under 11% in Denmark. These lower estimates probably reflect that, faced with high labour costs, many companies in the Nordic countries have already sought to move up the value-added chain and improve labour productivity by shifting their workforces out of routine jobs to ones involving less routine, more cognitive tasks.

Figure 9: Only a minority of jobs may be at risk of full automation in the near future



Note: % of all jobs by risk of automation. A job is considered to have a high risk of automation if more than 70% of its tasks could potentially be automated. A job is considered to be at risk of significant change if between 50% and 70% of its tasks could potentially be automated. The data refers to the situation in 2011–2012 or 2014–2015, depending on the country concerned. The data for the OECD represents a weighted average of the OECD countries in the OECD's Survey of Adult Skills (PIAAC).

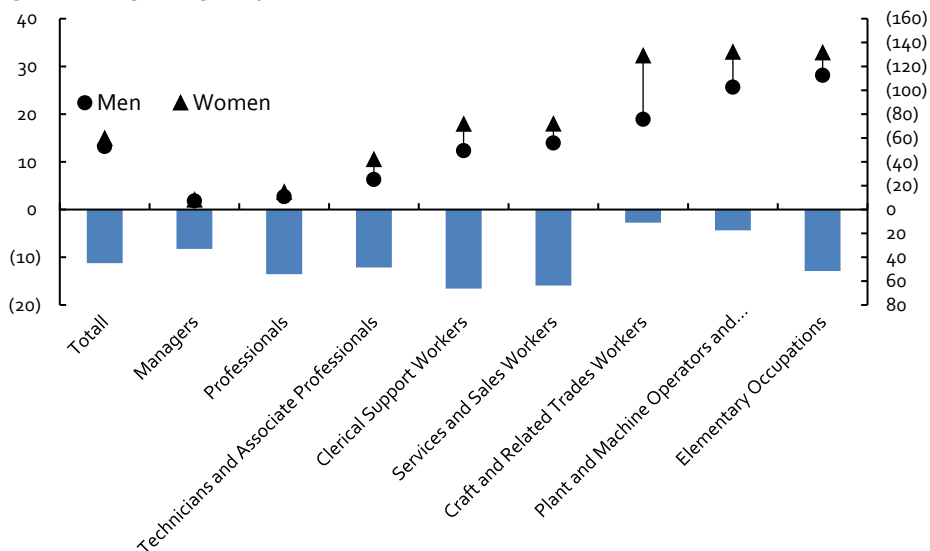
Source: OECD calculations based on data from the OECD's Survey of Adult Skills (PIAAC), see Nedelkoska and Quintini (2018).

Even these lower estimates should be interpreted with caution as the extent of actual job losses will depend on the speed of adoption of new technologies, but also the relative costs of replacing human labour with machines. More importantly, new jobs will also be created as a result of technological change, changes in consumer tastes and continued economic growth. The net impact on employment will therefore be lower than these estimates of job losses from automation suggest.

Nevertheless, while only a minority of current jobs may be completely automated in the near future, this could lead to growing labour market inequalities by skill level and age. On average across the 28 OECD countries included in the OECD's study of job automation, the risk of job automation is highest for low-skilled workers relative to high-skilled workers and for young and older workers relative to prime-age workers (Nedelkoska and Quintini, 2018; OECD, 2018b). It is also slightly higher for women (14.9%) than for men (13.2%) (Figure 10). In some occupations the gender gap is more substantial, especially in manual occupations. This suggests that on average in these occupations women perform more routine tasks that are potentially more automatable than the tasks men do and may need greater help in transiting to other less automatable jobs. However, in these manual occupations, apart from elementary occupations, women also account for a smaller share of all jobs than in other occupations.

Good opportunities for becoming re-skilled will be important not just for workers who lose their jobs but also for many more incumbent workers who will see the skill requirements of their jobs change considerably. It is estimated that for around 32% of jobs across 28 OECD countries, between 50 to 70% of the tasks performed in these jobs could be automated (Figure 9). These jobs are likely to undergo substantial changes in the way they are carried out and the skills they require. For the Nordic countries with available data, the proportion of jobs in this category was somewhat lower, at between 26 to 28%.

Figure 10: The gender gap in job automation



Note: % of jobs by gender in each occupation at high risk of automation (left-hand scale).

Share of women in each occupation (% , right-hand scale).

A job is considered to have a high risk of automation if more than 70% of its tasks could be potentially automated. The data represent a weighted average of the 28 OECD countries in the OECD's Survey of Adult Skills (PIAAC) and refer to the situation in 2011–2012 or 2014–2015, depending on the country concerned.

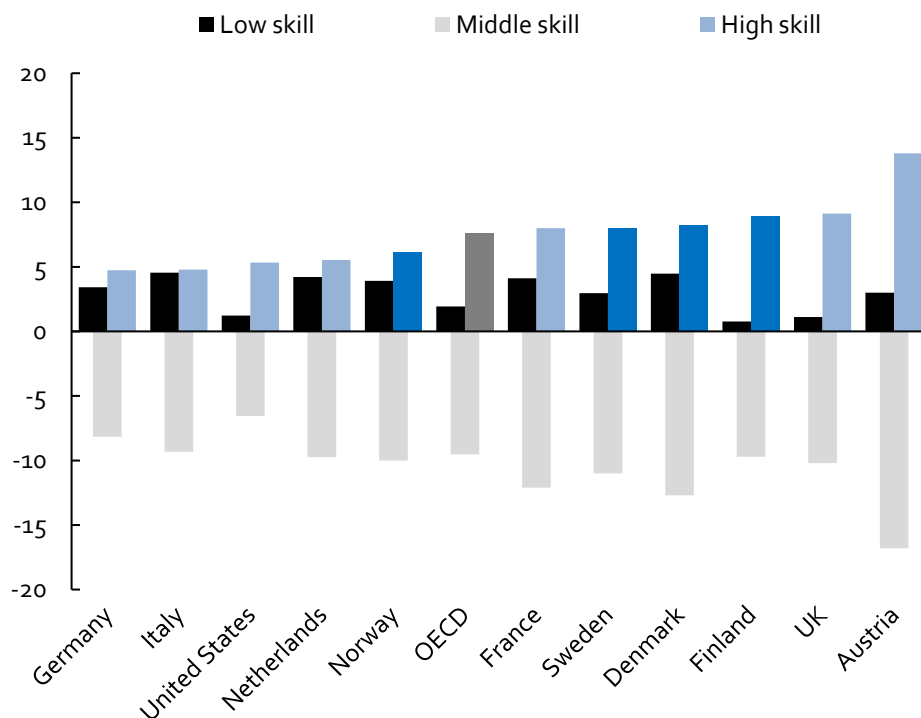
Source: OECD calculations based on data from the OECD's Survey of Adult Skills (PIAAC), see Nedelkoska and Quintini (2018).

4.1.8 Changing skill needs

As a result of digitalisation but also driven by increased international trade and population ageing, there has already been considerable change in the skill profile of jobs over the past couple of decades. New technologies tend to be skilled biased which means that their introduction increases the demand for high-skilled labour and reduces the demand for low-skilled labour. These technologies, as well as offshoring, have also been twisting demand away from jobs that mainly involve routine tasks (whether cognitive or manual) towards jobs that involve mainly non-routine tasks. Consequently,

many of the more economically advanced OECD countries, including the Nordic countries, have been experiencing a polarisation in the skill composition of jobs (Figure 11). There has been considerable growth in the employment share of high-skilled occupations, some growth in non-routine, low-skilled occupations associated with increased demand for personal care services, and a strong decline in the share of occupations that typically require only mid-level skills.

Figure 11: The disappearing middle: jobs by skill level



Note: Percentage point change in share of total employment, 1995 to 2015. High-skilled jobs correspond to ISCO-88 major groups 1, 2, and 3; Middle-skilled jobs correspond to ISCO-88 major groups 4, 7, and 8; and low-skilled jobs correspond to ISCO-88 major groups 5 and 9. The data excludes jobs in "Agriculture, hunting, forestry and fishing", "Mining and quarrying" and "Community, social and personal services". For Sweden, the 1995 data refers to figures for 1997. The OECD average is a simple unweighted average of selected OECD countries.

Source: OECD (2017a), *OECD Employment Outlook 2017*, Chapter 3, based on data from the European and national labour force surveys.

4.1.9 *New forms of work*

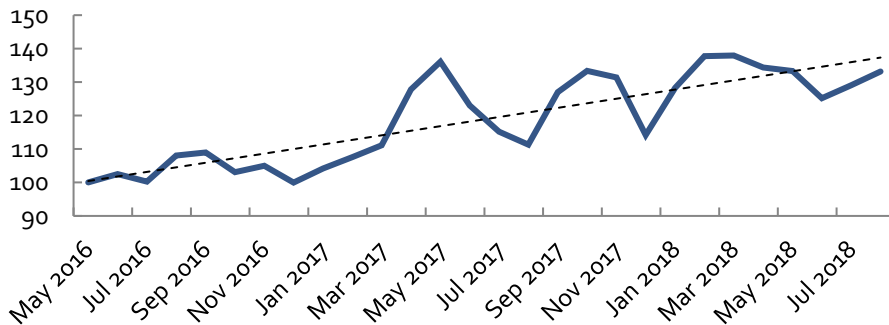
The interaction of technological progress with changing preferences is generating unprecedented opportunities for work to be carried out more flexibly. Of particular note has been the rise of the platform economy. For employers this has provided access to a much larger pool of skills and experience at a fraction of the cost of hiring workers on traditional contracts (OECD, 2016a). The platform economy presents advantages for workers as well, since it allows them to choose both where and when they work – which can be particularly useful for single parents, students, disabled people and seniors (OECD, 2016a). But it can also involve precarious work with little social security coverage and employment security, as well as low pay. For the Nordic countries, the platform economy may put further pressure on the sustainability of their welfare systems, if growing numbers of workers and their employers are able to avoid paying social security contributions through platform work.

While there is much talk about the rise of the platform economy, reliable and internationally comparable data are currently not available. Nevertheless, some partial indicators are available. The Online Labour Index captures global demand for online platform work in English and suggests that there has been considerable growth in recent years (Figure 12). However, most existing estimates suggest that the overall level of such work remains low. In the United States, for example, which has been at the forefront of the development of platform work, the share of “electronically mediated” workers who provide services either in-person or online through online intermediaries (such as Uber or MTurk) has been estimated at 1% of all workers in May 2017 (BLS, 2018). A survey of internet users in 14 EU countries also suggests that the proportion of the adult population (aged 15 to 74) that are platform workers is quite small (Pesole *et al.*, 2018). The proportion of adults obtaining more than 50% of their income from platform work is particularly low in both Finland (0.6%) and Sweden (1.7%), the only two Nordic countries in the survey, compared with 4.3% in the United Kingdom.

Another partial indicator that is available for all EU countries from the European labour force survey is the proportion of workers who are own-account workers (i.e. self-employed without employees). While this will also capture own-account workers who are not obtaining their jobs through online intermediaries, it provides a useful indicator of a more general form of non-standard work. Between 2000 and 2017, the incidence of own-account working rose in some but not all EU countries and so was broadly stable for the EU as a whole (Figure 13). There was also little change in the Nordic countries, where the share remains below the EU average and well below the share in, for

example, Italy and the UK. Thus, it would seem that platform work and other forms of non-standard employment, such as own-account working, are still not very prevalent in the Nordic countries.

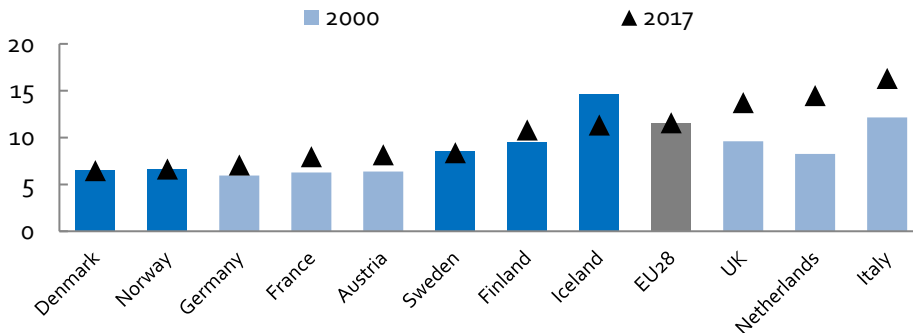
Figure 12: New forms of work are emerging: Panel A. Online gig work is growing rapidly from a small base



Note: Monthly averages of daily data for global new vacancies in English for online gig work, May 2016=100. The online labour index in Panel A corresponds to all vacancies posted in English for online gig work.

Source: Oxford Internet Institute's Online Labour Index, see Kässli and Lehdonvirta (2018).

Figure 13: New forms of work are emerging: Panel B. Own-account working has increased in some but not all countries



Note: Own-account workers in first or second job as a % of all workers. Own-account workers in Panel B are self-employed workers without any employees.

Source: Author's calculations based on the results of the European Labour Force Survey.

4.1.10 *Policy responses: paradigm shift or update?*

In the face of these changes in the labour market, do Nordic countries need to undertake a paradigm shift in their labour market and social policies and institutions or just some adaptation and revision? While a comprehensive answer goes beyond the scope of this paper, some policy pointers are given in five key policy areas: social protection, employment regulation, measures to facilitate labour mobility, development of skills, and social dialogue.

4.1.11 *Social protection*

It has been suggested that the sustainability of social security systems is at risk because of both falling contributions and rising expenditures. Contributions may shrink because of the growth in non-standard forms of work not being subject to social security contributions, outsourcing of work to other countries and the slowdown in labour force growth linked to population ageing. At the same time, social expenditures could rise steeply because of rapidly growing numbers of pensioners as the population ages and larger numbers of unemployed workers are displaced from their jobs by technological change. These concerns have prompted various proposals to introduce a universal basic income that would guarantee a minimum income for everyone, irrespective of whether they are employed or not or their type of working arrangement. In particular, a pilot project has been underway in Finland to give an unconditional basic income to a random sample of unemployed people. However, the design of these types of schemes raises many difficult issues, including their potentially high cost, and distributional issues because different groups would benefit or lose out from their introduction relative to current arrangements (OECD, 2017b). Moreover, this would appear to be a radical response when it is still far from clear how extensive job losses may be and when platform work remains rather rare, even if it is growing quickly.

Nevertheless, existing holes in the social safety net may become even larger as non-standard forms become more prevalent. Access to various social security benefits for the self-employed provides one indication of where these holes exist for one important form of non-standard employment (Table 1). In only relatively few EU countries are all types of social security benefits that are available to employees also available to the self-employed. This is the case in Iceland but not in the other Nordic countries. At the same time, these gaps in social security coverage do not appear to be more consequential in these countries than in many other EU countries and a number of steps are being taken

to reduce or eliminate these gaps, for instance, under Denmark's new unemployment benefit arrangements, all income sources will be treated equivalently (equal rights for self-employed, non-standard workers, on-demand workers and standard workers). This will allow people to more easily combine self-employment and employment income, and makes it simpler for self-employed individuals to prove discontinuation of operations in order to access unemployment benefits.

To finance benefits, new types of workers will also need to be covered by the tax system. In France, since the introduction of the 2016 Finance Bill, all platforms are required to provide an annual earnings statement to service providers in order to facilitate their tax returns. In Estonia the tax authorities are working together with platform operators to develop a system whereby tax is withheld directly via the platform to facilitate income tax collection. There may also be scope to encourage platforms to put in place their own mechanisms to improve worker protection. For example, the freelancer platform Upwork offers a number of services, including unemployment and health insurance.

Table 1: Benefit rules for the self-employed are different from those of standard workers

	Old-age	Invalidity	Parental benefits	Sickness benefits	Occupational accidents and injuries	Unemployment benefits
Denmark	Full	Full	Full	Full	Voluntary opt-in	Partial
Iceland	Full	Full	Full	Full	Full	Full
Finland	Full	Full	Full	Full	Full	Partial
Norway	Full	Full	Full	Partial	None	None
Sweden	Full	Full	Full	Full	Full	Partial
Austria	Full	Full	Full	Full	Full	Voluntary opt-in
France	Full	Full	Partial	Partial	None	None
Germany	Partial	Partial	Partial	Partial	Voluntary opt-in	None
Italy	Full	Partial	Full	None	Full	None
Netherlands	Partial	Voluntary opt-in	Partial	Voluntary opt-in	Voluntary opt-in	None
Slovenia	Full	Full	Full	Partial	Full	Full
Spain	Partial	Full	Full	Full	Voluntary opt-in	Voluntary opt-in
UK	Partial	Partial	Partial	Partial	None	Partial

Source: Extracted from Pesole *et al.* (2018).

4.1.12 *Employment regulation*

Social protection not only implies some form of income guarantee if out of work but also protection while in work from arbitrary dismissal, wage exploitation, and poor working conditions. Therefore, a whole raft of employment regulations have been developed in all OECD countries to provide this protection to workers in standard forms of employment. However, concerns have been raised that these employment regulations are becoming increasingly outdated in the face of the rising numbers of workers in non-standard forms of employment, such as platform workers.

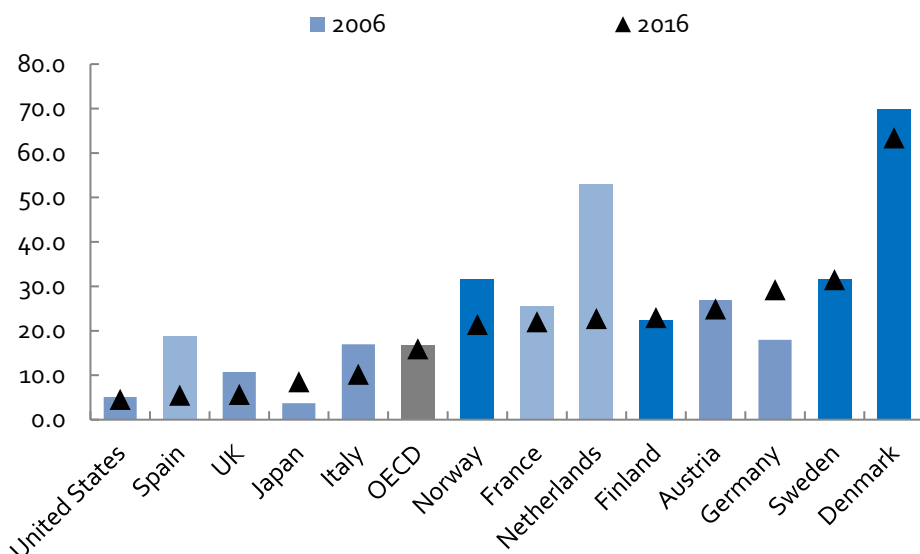
Again, it is not clear whether wholesale reform of employment regulations is needed or whether it is a matter of partial reform and better enforcement of existing regulations. For example, there are minimum wage arrangements in most countries, including for piece work and home work, which could in theory be used to guarantee a fair wage for platform workers. However, in the Nordic countries there is no national minimum wage, as wage floors are set through collective agreements, which cover most workers. This could leave an increasing number of platform workers in these countries without any guarantee of fair wages. In response to this situation, the world's first collective agreement between a platform (Hilfr) and a trade union (3F) was signed in Denmark in early 2018. More radically, some form of national minimum wage, including a minimum rate for piece work, could be introduced.

With respect to employment protection legislation governing hiring and firing of workers, it may also be a matter of defining more clearly the employment status of a worker to prevent misclassification of employees as independent contractors. In some countries this may also require shifting the burden of proof of employment status from the individual worker to the contracting company/employer. Finally, it may also be a case of reducing incentives to substitute standard forms of work for non-standard ones. For example, in the Netherlands there has been a considerable rise in the incidence of non-standard forms of employment, but this has been largely driven by a large gap in the strictness of employment protection legislation for permanent workers versus temporary workers and in the tax and social security treatment of employees versus independent contractors (OECD, 2018c).

4.1.13 Measures to facilitate labour mobility

Well-functioning social safety nets can ensure that workers who lose their jobs because of digitalisation or globalisation have adequate income support while out of work. However, this needs to be accompanied by help in finding another job. One indicator of the resources devoted to this support can be constructed by expressing total expenditure on Active Labour Market Programmes (ALMPs) per unemployed person as a % of GDP per capita (Figure 14). In the Nordic countries, relative to their GDP per capita, expenditure on ALMPs per unemployed person is relatively high. This may partly explain high reemployment rates of displaced workers within a year of them losing their jobs in these countries relative to other OECD countries. Sweden, in particular, provides a good example of pro-active job-search assistance and training through its Job Security Councils (OECD, 2018a).

Figure 14: Resources for helping the unemployed have risen



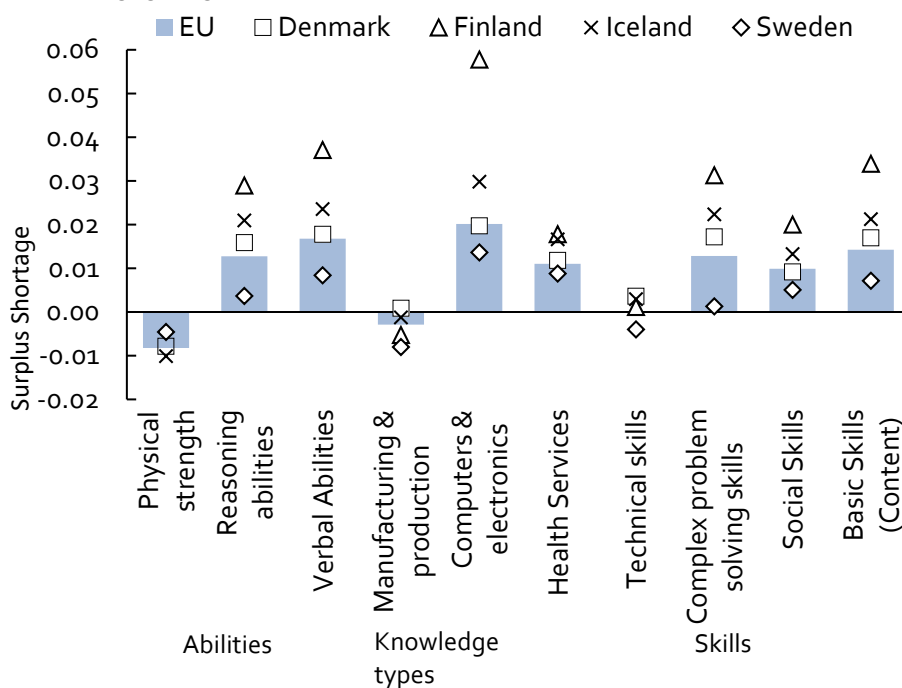
Note: Spending on ALMPs per unemployed person as a % of GDP per capita. ALMPs refer to Active Labour Market Programmes. The data for 2016 refers to 2015 data for France, Italy and Spain. The data for the OECD represent a simple average of all OECD countries.

Source: Source: Author's calculations based on data on ALMP expenditure, total unemployment and GDP per capita from OECD's online database, OECD.Stat, <https://stats.oecd.org/>

4.1.14 Skill development

Changing skill needs as a result of new technologies and globalisation raise considerable challenges for all countries to ensure that the skills workers possess match those required by employers. There are already signs of emerging skill imbalances across EU countries (Figure 15). In general, there are skill shortages in those areas where demand has been strongest, such as for reasoning and verbal abilities, knowledge of computers and electronics, or complex problem-solving skills. Similarly, skill surpluses have emerged in areas where demand has been weaker, such as abilities requiring physical strength or knowledge of manufacturing and production. This pattern is broadly similar in the Nordic countries, although with some differences in the intensity of these skill imbalances. With the notable exception of Sweden, skill shortages are generally more acute in the Nordic countries than on average across EU countries. This is especially the case in Finland, and in the area of knowledge of computers and electronics in particular.

Figure 15: Emerging skill gaps



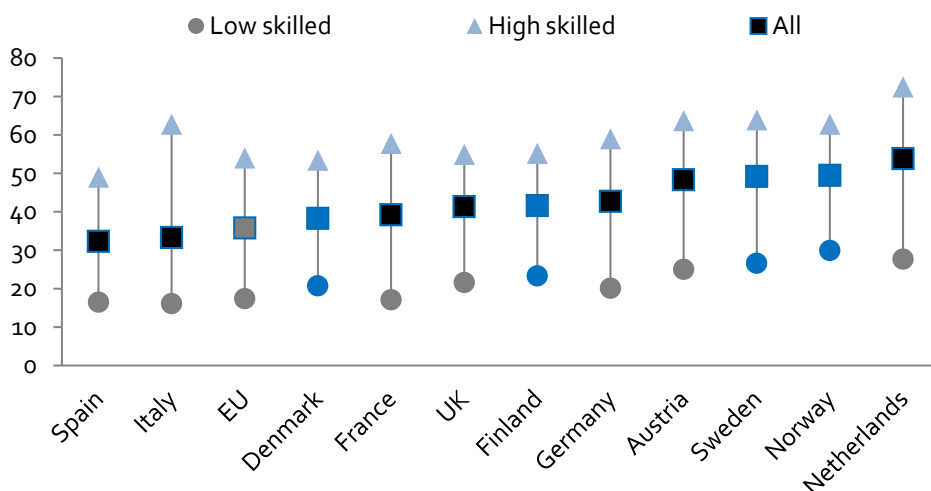
Note: Index of the intensity of skill shortages or surpluses.

Source: OECD Skills for Jobs Indicators, <https://stats.oecd.org/Index.aspx?QueryId=77642>

To tackle these skill imbalances, governments will need to ensure that young people enter the labour market with the right type of skills to navigate successfully in an ever-changing, technology-rich work environment. Even more critically, better opportunities will also be needed for workers who are already in the workforce to update their skills and learn new ones. In the context of rapid population ageing, these workers will be facing longer worker lifetimes and a greater risk of their skills becoming obsolete because of technological change.

Currently, investments in adult learning vary considerably across countries, but also within countries among workers by skill level (Figure 16). Overall, participation in job-related training is high in the Nordic countries relative to the EU average, particularly in Norway and Sweden. Nevertheless, more could be done to better align skill acquisition with skill needs. Even in the case of Sweden, where there are extensive exercises for assessing and anticipating future skill needs, further efforts should be made to better align and coordinate these exercises at the national and regional level (OECD, 2016b). In addition, as elsewhere, there is a large gap in training participation in all of the Nordic countries between the low-skilled and the highly-skilled. This may partly reflect lower returns to training for the low-skilled, but it also reflects other barriers to training participation that should be addressed. Efforts should also be targeted at small- and medium-sized enterprises, which tend to engage much less in training than larger enterprises.

Figure 16: Turning lifelong learning into a reality



Note: Participation rate in job-related training by educational level for adults aged 25–64, 2016 (%). EU is the weighted average of all EU countries.

Source: European Adult Education Survey, 2016, as extracted from the Eurostat database.

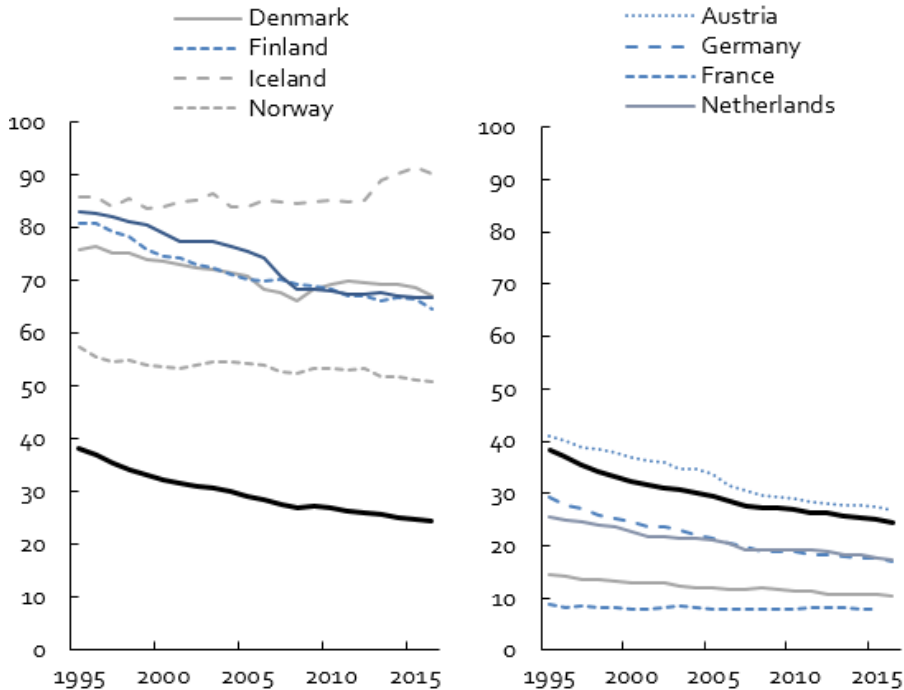
4.1.15 Social dialogue

Social dialogue can play a key role in facilitating the adoption of new technologies and changes in work organisation, as well as in ensuring that the benefits of these changes are more widely shared. In this respect, the Nordic countries are well placed. The proportion of workers who are trade union members remains much higher in the Nordic countries than in other OECD countries (Figure 17). Nevertheless, with the exception of Iceland, there has been some erosion of trade union membership over the past two decades, reflecting changes in the world of work.

With the rise in new forms of employment, and platform work in particular, there is a risk of further erosion of the collective representation of workers in the Nordic countries. The challenge for policy will be to facilitate the collective representation of workers in these new forms of work. This will require action by governments, employers and trade unions. For example, governments can ensure that existing competition law does not prevent platform workers from collectively negotiating pay and working conditions.

Platform companies also have a role to play and should be encouraged to provide greater transparency in their remuneration and employment practices so that workers can make more informed decisions about whether to perform gig work or not and with which platform to do so. Finally, trade unions should also be encouraged to reach out beyond their traditional members to cover platform workers. For example, in Germany the largest metalworkers' union (IG Metall) has been behind the creation of FairCrowdWork Watch, a platform dedicated to improving digital workers' working conditions.

Figure 17: Active trade union members as a percent of all employees



Note: OECD is the weighted average of all OECD countries.

Source: OECD (2017a), *OECD Employment Outlook 2017*, Chapter 4.

4.1.16 *Conclusions*

In many ways, the Nordic countries are well placed to meet the challenges confronting the world of work. They have highly educated workforces that can seize the benefits of the new technologies and fewer jobs are at risk of automation than in many other OECD countries. Nevertheless, they are small open economies facing increased global competition, which will keep pressure on employers to become more productive through innovation and by adopting labour-saving technologies. The presence of strong social partnerships in the Nordic countries should help to facilitate these changes. Population ageing in the Nordic countries is likely to be less rapid than in some other OECD countries but, at the same time, there is less scope to raise taxes to pay for higher social welfare expenditures or raise employment rates of older people to contain the rise in these expenditures.

While a wholesale reform of employment and social protection policies is probably not needed in the Nordic countries to cope with the likely changes in the labour market, some reforms could be envisaged to improve the “future readiness” of these policies. Firstly, steps should be taken to close gaps in the coverage of the social security system by defining more clearly the status of different forms of employment and in ensuring that workers in non-standard forms of employment have greater access to standard social security benefits. Secondly, a growing gap in the coverage of workers in non-standard forms of employment by collective agreements needs to be addressed. This could be achieved by facilitating the establishment of collective agreements to cover new forms of work, or possibly by introducing a national minimum wage, including a minimum rate for piece work. Thirdly, it will be important to ensure that adequate resources continue to be devoted to effective Active Labour Market Programmes (ALMPs) that help facilitate labour mobility. This will not be easy when overall public expenditures are already very high. Finally, continued efforts will be required to strengthen the adult learning system to ensure a better alignment with skill needs and to narrow disparities in participation in training.

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4.2 The future of work: opportunities and challenges for the Nordic models

Jon Erik Dølvik, Fafo,
Stockholm, Future of Work Conference, 15 May 2018

How will work and working life change in the future? Will new technologies destroy large numbers of jobs and propel joblessness or will rising productivity spur the creation of more, new, and better jobs? Which kinds of work and skills will decline, and which will grow? How will the changes affect labour markets, work environments, employment relationships, and the regulation of working life? Will the Nordic model become a casualty or a resource in the changing future of work? These are the kinds of questions the project *Future of Work: Opportunities and Challenges for the Nordic Models* is assigned to examine. Funded by the Nordic Council of Ministers and organized by Fafo in cooperation with around 25 researchers from all five Nordic countries,⁴ a central aim is to provide policy and actor-oriented knowledge and contribute to public debates, exchange of ideas, experience, and learning across the Nordic boundaries. In this brief introduction, I will map some of the main drivers and trends expected to influence the future of work and, towards the end, point to some of the challenges these are likely to pose to the Nordic models of work and welfare.

4.2.1 Drivers and trends influencing the Future of Work

The current debates about the “Future of Work” (FoW) are not new. Ebbing and flowing with economic cycles and technological shifts, such debates have – apart from in the “golden era” of postwar growth – been marked by diverging and shifting perceptions of the drivers and consequences of working life change.

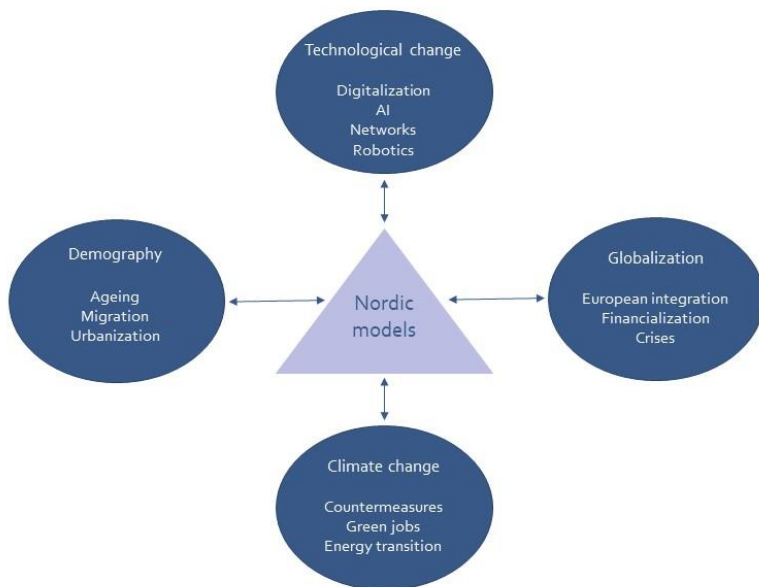
⁴ Pillar (1) of this project will discuss the main drivers and megatrends expected to influence the future of work and the Nordic models. The subsequent pillars will address developments in (2) digitalization & robotization of traditional work, (3) self-employed and non-standard forms of work, (4) new agents such as platform mediators & managers of work, while (5) will address the impact on occupational health, and health and safety policies; (6) labour law and possible pathways for regulatory reform, and the final report (7) will, in view of the findings, discuss possible needs, tools, and trajectories for renewal of the Nordic model of work and welfare.

Today, the public debates about labour market developments are marked by a number of concerns, partly of opposite character:

- *Lack of jobs* – due to automation and robotization;
- *Shrinking labour supply* – due to ageing and demographic change;
- *Surplus of labour lacking needed skills* – education failure and mismatch;
- *Joblessness & welfare dependency* – amplified by migration;
- *Polarisation of occupational structures* – reinforced by digitalisation;
- *Casualisation of work* – due to new business concepts and forms of employment;
- *Adieu to the wage-earner relationship* – around which the Nordic models are built.

In order to assess how work and labour markets will develop in the future, and how we can influence this, we need knowledge about the past and present dynamics of change in working life. In principle, the Future of Work is *unknown* and *open*, but it is important to have a realistic picture of the external drivers and trends that are likely to frame its development.

Figure 18: Main drivers and megatrends likely to influence the Future of Work



As indicated, there are a variety of factors that shape changes in working life. Too often, however, debates about the future of work narrowly focus on changes in technology – currently digitalisation – and the actors driving it, while other important factors and actors that already are at work, and will continue influencing working life, tend to be ignored. The ILO Global Commission on the future of work has identified four such megatrends: globalisation, technology, demography, and climate change (ILO, 2018a). These megatrends, as well as related and underlying trends, such as urbanisation, European integration and financialisation (the increased impact of financial markets and debt on economic development), will certainly contribute to changing international and Nordic working lives in the decades ahead of us. The question is how.

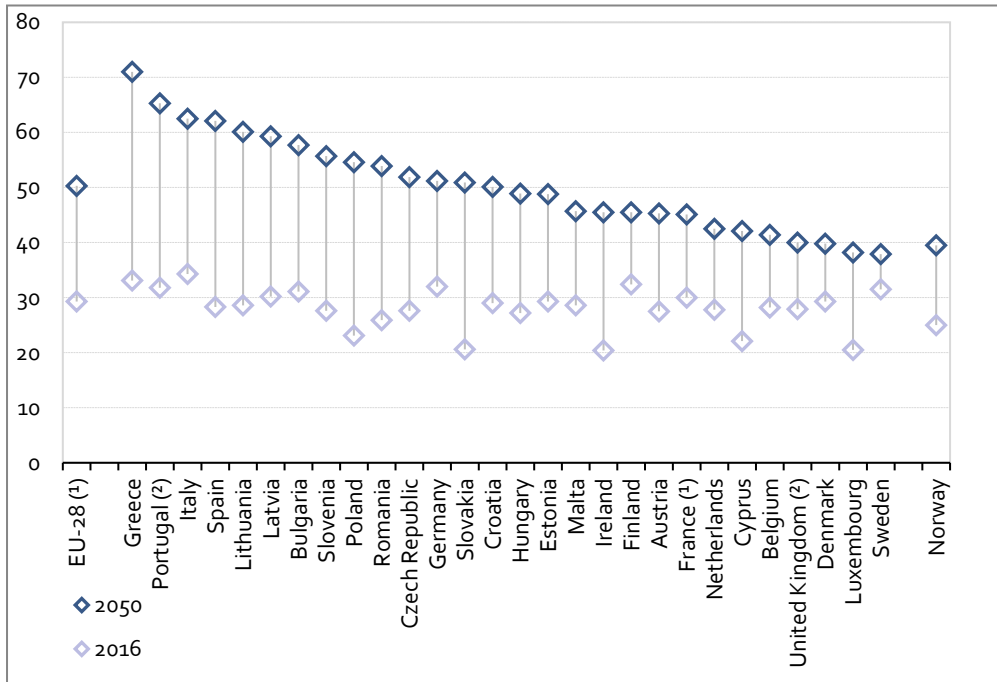
4.2.2 *Powerful demographic waves: ageing and migration*

Changes in the size and age composition of the population are key determinants of changes in the labour force and the number of elderly those in work will have to fund and take care of. Demographic changes are highly predictable – except for the immigration part – and according to all estimates will engender drastic decline in the working-age population share and an even stronger rise in the share of elderly citizens in Europe in the coming decades. Eurostat projections indicate that the EU-28 working age population in the next 50 years will fall by some 45 million, from 65% of the population in 2015 to 55% in 2080, mainly before 2050.⁵ While the population share that is comprised of children will change only modestly, the number of the elderly population (65+) in Europe will rise dramatically from 19 to 29% of the population, and the number of very old (80+) will more than double, from 27 to 66 million (Eurostat, 2018). As a consequence, the *old-age-dependency ratio* — the number of elderly divided by the number in the working age population — is projected to increase from 29% in 2016 to 50% in 2050 (i.e. from more than 3 active age per elderly today to less than 2 active age per elderly in 2050). Such sweeping changes are in many countries deemed to create shortages of skills and labour in several sectors, and increase the burden on the labour force in financing welfare and care for the elderly. Among the countries hardest affected by these demographic trends are

⁵ Main scenario, based on medium range assumptions regarding net immigration (Eurostat, 2018).

Poland and the Baltic states, where rapid ageing is accompanied by drastic shrinking of the entire population and the labour force. The potential for further Nordic labour import from these countries may therefore appear to be limited.

Figure 19: Old-age dependency ratio 2016–2050



Source: Eurostat, 2018.

Simultaneously, the *world population* is projected to expand from 7.3 billion in 2015 to 9.7 billion in 2050. More than half of this growth will occur in *Africa*, where the population will more than double (UN, 2017). If job growth does not keep pace with the surging labour supply, the pressures for outward migration are likely to amplify – possibly reinforced by detrimental effects of global warming.

The demographic dynamics in the Nordic region will pull in similar directions to those in other European countries, but to a highly varying extent. Sweden, due to a relatively young population, partly owing to its large immigrant share, will see strong population growth (ca. 3 million) 2015–2050, whereas the already rapidly ageing Finnish population will hardly grow at all. Norway and Denmark, in the middle, will also see significant

population growth. The *elderly population* (65+) will grow markedly in all Nordic countries but at different paces, with least growth in Sweden and most in Finland. Due to the differences in age profiles and population growth, the evolution of *labour supply* in the Nordic countries will diverge. In Sweden the labour supply (20–64) is projected to increase by 7–8% 2015–2030 and a further 17–18% 2030–2070, in contrast to significant decrease over this entire period in Finland. Projected growth in Denmark and Norway is comparable to that in Sweden 2015–2030, but Denmark will see modest decline and Norway modest increase 2030–2070 (European Commission 2018).

4.2.3 *Curbing climate change requires sweeping restructuring*

Societal efforts to minimize carbon emissions and curb global warming are bound to attain increasing salience in future working life. With prospects for more extreme weather and natural disasters, major investments and adjustments will be required in the physical infrastructure, the energy sector, urban and city planning, construction, agriculture, and capacities for handling emergencies. More droughts, floods, and environmental degradation destroying jobs and livelihoods around the globe are likely to provoke outward migration waves from affected areas in developing countries.

While the transition towards a greener economy will affect many industries and employment therein, new production and job opportunities will open up in other sectors. Meeting emission reduction targets will require significant restructuring efforts. While branches dependent on non-renewable energy will face rising costs and job losses, industries related for instance to generation of renewable energy and carbon-free transport are likely to see rising employment. The green shift may thus present considerable opportunities for growth and innovation in companies, industries and countries that are able to respond to the rising demand for clean and renewable production and services. The net employment effects of this transition are expected to be positive, but the pace and effects will vary between countries depending on their energy sources and production patterns. For example, Norwegian working life is bound to undergo major restructuring when its engine in petroleum-related activities are phased out.

4.2.4 *Globalisation: accelerating or decelerating?*

Technological shifts in transport and communication technology, from the emergence of steam engines and the telegraph to autonomous vehicles, social media and virtual reality, have been making the world “smaller” and the global economy more interconnected. The long-term trend towards liberalisation of global trade and investment flows has benefitted small, open industrialized economies, especially those with social models enhancing the competitiveness of the workforce and cushioning the swings in volatile world markets. The accelerating globalisation of financial markets in recent decades has had more ambiguous effects, however, as mirrored in the financial instability and crises of past decades, culminating in the Great Recession following the 2008 Wall Street crash. Overall, the Nordic economies and working lives have successfully benefitted from globalisation. That in no way means that there have not been adverse effects; in the 1970–1980s, many Nordic jobs in the production of ships, shoes, and textiles were offshored, and restructuring of international production and delivery chains in recent decades has implied salient relocation of manual jobs, among other areas in manufacturing, banking, finance, shipping and so forth, along with growth in knowledge-intensive, white-collar jobs at home.

A central element of the Nordic capacity to weather international instability has been macro-economic policy regimes, where sound public finances in rainydays have been crucial to be able to pursue countercyclical stabilisation policies and let the automatic stabilizers of the tax and transfer systems cushion the swings. While globalisation has accentuated the importance of preserving such capacity at nation/state levels, it has in several ways constrained that capacity, for instance, through increased tax competition, company regime shopping, and weakening of monetary and fiscal policy tools.

Compared to the development in past decades, when China and other emerging economies became part of the global production and trade system, the pace of economic globalisation may now seem to be losing momentum. The recent backlashes against global and European economic integration have demonstrated that a further deepening of globalisation is neither inevitable nor irreversible. Being dependent on free and predictable international economic exchange, a reversal to protectionism and international trade conflicts would clearly be harmful for the Nordic economies and working lives. It is doubtful, however, that such a political backlash would be sufficient to switch the market-driven dynamics of globalisation into reverse. The fall in communication and transport costs has not only coupled markets for goods and

services around the globe, but has led to accelerating dissemination of technology and exchange of (big) data, information, and knowledge-based tasks on a global scale. The growing number of services that can be delivered worldwide online enables both accelerated innovation and increased international competition. Combined with the digital revolution of production and the leap in higher education in developing countries, these dynamics may add momentum to ongoing changes in global value chains. A possible scenario is thus that we will see further twists of globalisation in knowledge-intensive production, whereas the offshoring of traditionally labour intensive production may retard and in some areas even give way to some reshoring to high-cost western countries by means of advances in robotics, automation, and additive manufacturing.

4.2.5 *Technological change: towards a digital revolution in working life?*

The rapid technological progress in areas such as computing, robotics, artificial intelligence and biotechnology is increasingly framing debates on the future of work. The expanding possibilities of digital technology are foreseen to propel product innovation, rationalisation, automation and reorganisation of work on an unprecedented scale. This development is driven by an exponential increase in computing power, coupled with ever-improving algorithms, networks and big data, often referred to under the umbrella concept of “digitalization”.

Figure 20: Digitalization and robotization of traditional work – threat or opportunity for Nordic working life?



- Robotics, automation
- 3D printing, nanotech
- Machine learning algorithms
- Artificial intelligence
- Big data
- Networks, sensors
- AP and VR
- Biotech, genetics
- Cybernetics
- Fintech
- Blockchain
- Cobot-care
- Platform work...

Photo credits: Unsplash.com

On the positive side, the digital technologies can in many respects contribute to better services, work environments, work-life balances, and significant productivity growth in a range of sectors. The fear, however, is that the robots and other forms of digitalisation will steal jobs and replace human labour. The most significant change is that even cognitive routine tasks are becoming automatable, in addition to an ever-expanding

number of manual routine tasks. The most dramatic forecasts have thus warned that large parts of the workforce may now be susceptible to being replaced by computerisation and have predicted a technological transformation of proportions comparable to the 19th century industrial revolution (Frey and Osborne, 2013; Brynjolfsson and McAfee, 2014). But as new studies have emerged, such predictions have become increasingly contested. Historical experience as well as more recent, disaggregated forecasts suggest that technological advancements tend to create more new jobs than they destroy – especially in digitally advanced countries such as the Nordics (Arntz et al., 2016; Manyika et al., 2017). It is however clear that the digital means of production will alter the demand for skills and the occupational structure, according to most studies in the direction of sharper polarisation, or in other words increased growth in highly-skilled jobs, decline in medium-skilled routine jobs, and more modest growth at the lower end. If this is true, there is a looming risk of rising inequalities, and skill mismatches, which at least temporarily may lead to more structural unemployment and exclusion, depending on the political responses especially with regard to retraining, life-long learning, and adjustment support.

Opportunities and threats

Opportunities

- Innovation, efficiency, productivity, growth, home-sourcing, job market matching...

Threats

- Will the robots steal our jobs?
 - Frenzy phase: Massive eradication of jobs...
 - Maturing phase: Modest job effects, perhaps even positive...
 - Crux: Are values invested in new jobs and labour?
- Polarization of skills and jobs -> the "squeezed middle"?
- Control, monitoring, alienation and degrading of work?
- How will the new co-workers – "cobots" – behave?

The new technologies may also enhance flexibility in work organisation and staffing strategies, notably through digital platforms matching local labour supply and demand, and online crowd-work coupling tasks and workers, regardless of geographical constraints. This allows jobs to be de-bundled into smaller tasks, potentially creating flexibility for workers wanting to freelance or to top up their incomes, while providing

companies with greater access to external labour “on demand”. Digital platforms spurring new forms of non-standard employment simultaneously challenge established institutions for regulation of rights and duties associated with the employment contract, work environment, and the conditions for voice, participation, and organisation at work.

4.2.6 *Challenges arising for the Nordic models*

The global megatrends sketched here – technology, demography, globalisation and climate change – will certainly influence the trajectories of work and labour market change in the years to come. But the impact of such trends is neither unidirectional nor independent of political agency. Often they pull in divergent directions, some trends prove weaker than expected, and some even go in reverse. Moreover, the opportunities and threats these trends pose to jobs and working conditions depend on economic conditions, the responses of economic actors, and the way they are filtered by institutions and policies varying across industries, regions, countries, and social model types. That is, the future of work is not pre-determined by technological or socio-economic megatrends. Their effects will be shaped by political agency and are likely to evolve along divergent national trajectories and differ across industries and groups of employees.

Due to space constraints, two important challenges that Nordic working lives will face in the passage towards the future of work are highlighted here:

- Given the predicted polarisation of the structure of occupations, skills, labour demand, and wages associated with further digitalisation, along with the limited potential for technical automation of many non-routine, manual services jobs, huge renewal efforts are likely to be required in the field of occupational skill formation and retraining if major skill-mismatches, widened wage gaps, and growing exclusion at the lower-end of the labour market are to be avoided. Given that the majority of the 2030 workforce is already in employment, strengthened capacity and better arrangements for in-work, life-long training is required in particular. As the educational systems are often poorly equipped to match this challenge, Icelandic and Danish examples that social partners, supported by the state, can find new, inventive ways to resolve this pressing issue, may show a way ahead.

- Given that the Nordic social models are built around the wage-earner relationship and the prospects of further fragmentation of employment relationships are expected to result from digitalisation, considerable efforts will probably be needed to align the systems of social insurance, labour rights, and regulations better to the needs of those falling outside the traditional Nordic arrangements. This might prove important also to prevent further withering of the collective organisations and regulations on which the working life model relies, and to prevent new forms of social marginalisation and inequality. A precondition, however, is that proper arrangements for distribution of the value added that is provided by use of novel technology, including the digital innovations enabling increasing returns to scale, are in place at company level, nationally, and transnationally. The latter pertains not least to maintenance and renewal of the redistributive function of the taxation systems.

Whereas Nordic working lives have been privileged by their strong institutions, they are now entering a phase where their ability to thrive will increasingly depend on the capacity of the actors involved to foster *institutional innovation*. Be it in the areas of life-long learning, protection for new categories of labour, inclusion of groups with little primary schooling, or finding ways to counter the growth in inequality and ensure that all economic actors are contributing to the collective good, the recipe to become fit for the future of work is hardly to abolish existing arrangements but to engage in imaginative adjustment and renewal of the institutions that were once inherited from the pioneers of the Nordic model.

Figure 21: The “Future of work” is unknown – but it is likely to challenge important features of Nordic working lives



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4.3 We own the future of work

Carola Lemne,

Director-General Confederation of Swedish Enterprise

A contribution to the ILO conference report prior to the 2019 anniversary

"We are suffering just now from a bad attack of economic pessimism. It is common to hear people say that the epoch of enormous economic progress which characterised the nineteenth century is over; that the rapid improvement in the standard of life is now going to slow down—at any rate in Great Britain; that a decline in prosperity is more likely than an improvement in the decade which lies ahead of us. I believe that this is a wildly mistaken interpretation of what is happening to us. We are suffering, not from the rheumatics of old age, but from the growing-pains of over-rapid changes, from the painfulness of readjustment between one economic period and another."

(John Maynard Keynes, "Economic Possibilities for our Grandchildren" [1930])

"The future belongs to those who believe in the beauty of their dreams."

This was not the message from Lord Keynes, but it is a famous statement made by Eleanor Roosevelt a long time ago, and it is still relevant.

The present is filled with fears for the future and a lack of belief in the beauty of our dreams.

In the early part of the Industrial Age, Luddites rioted against automation. Today citizens have political rights and can vote against automation if they are given the opportunity, and that may very well happen. Hence the need to focus on the positive visions for a future that may come. There are great opportunities present today – and tomorrow.

Today the key word is not automation but digitisation and the fear heard from many voices is that jobs for everyone, and hence a widely spread wealth, will be just a page in the history books of the future. Something that was but is no more. But mankind owns not only the present but also the future.

If there is a single crucial thread that has persisted through human history it is the importance of co-operation. This allows communities to accomplish tasks that individuals working alone cannot. In modern times the most effective way to coordinate behavior has been through market economy, where individuals and companies act on markets and where utilisation of comparative advantages, competition and the price mechanism are key factors.

The opportunities are developing and there is no doubt that the positive implications for mankind are great if one accepts that change is an inevitable part of human progress and acts to achieve the most favourable outcome of progress.

But progress is not easy to foresee. Martin Wolf of the *Financial Times* has written about one area of progress that nobody was able to see before it was a fact.

"In the past half-century humanity has made extraordinary progress. This is unquestionable. This consists of more than higher incomes. It consists also of longer and better lives. We know this has happened. We also know why. [...] In the early 1970s, the average woman produced just under five children. Many prophets of doom warned of unmanageable population explosion. Today, the global fertility rate is down to 2.4. In China, it is well below replacement level. In Brazil too, where the Catholic Church was deemed an overwhelming obstacle to birth control, it is also below replacement level. Sub-Saharan Africa is the only big region where fertility rates remain high."

Wolf quotes extensively from Hans Rosling's marvellous data animation website Gapminder.org and Rosling's posthumous book *Factfulness* (2018) that describes many dimensions of progress. These include the spread of female education, improvements in the supply of clean water, the huge rise in the number of vaccinations, and even the spread of democracy.

The future of work is in this broader context just one aspect of the future to come. The other aspects of the world's development these past 50 years will continue to be of great importance, and so is the need to keep a strong international system of rules and mutual agreements that are key to a continued, positive development of mankind.

We must never forget what work once was when we discuss the future of work.

In the Middle Ages, work for most people meant trying to survive. It meant working in order to get food for yourself and your loved ones. It meant toil and sweat and probably tears as well. Medieval work, to quote English philosopher Thomas Hobbes, was what made life "nasty, brutish and short". In a sense this is what work has been for most of the history of mankind.

Work has been about survival, about food and about making it another day. Technology in this age was essentially a tool augmenting human physical strength. You would use a plough and a horse. Perhaps you had a pick that allowed you to more effectively dig ditches. Technology was a tool – nothing else.

This started to change with the rise of industrialism. For the first time we started to see automation. The Spinning Jenny – a special spinning frame – was accused of taking

jobs, and workers protested. The Luddite movement was born – its adherents destroyed machines and resisted change.

As the industrial revolution happened something else also changed. We started seeing rapid and significant economic growth, and that in turn started raising the overall living standards and started to lift billions out of poverty. Work started changing into something else, into something we engage in to better our situation and find purpose. Welfare systems started developing. Economic growth even allows us to look at the future and think that maybe, just maybe, we can see a point at which work as we have known it will end – as automation takes over more and more of the tasks that humans used to perform.

This point was predicted by the famous economist John Maynard Keynes already in the 1930s. Keynes' point – outlined in a paper on "The Economic Possibilities of Our Grandchildren" is essentially that we no longer need to work, because living standards have stabilised, and we have what we need. The economy may shift to just produce leisure and the great challenge will be what to do with ourselves.

Keynes was known to worry that we would all turn into the British aristocracy, and spend our time on cricket, gossip and, as he said, infidelities. A "bleak" future indeed – and one in which work does not just change, but ends.

But we are Keynes' grandchildren, and we are still working. Why is that? One possibility emerges when we read the actual essay. It is obvious when you study Keynes that he assumes growth in a static context – in a world that remains largely the same. The idea that the world evolves in different ways is not a part of his analysis. But it is equally obvious to us, as we look at the world around us, that it has changed a lot, and in unforeseeable ways.

Technology has moved from augmenting our physical strength, to automating our physical labour, to augmenting our cognitive capacity and to automating simpler tasks. This is happening fast and our challenge today is to figure out how to adapt to this new situation.

In order to respond to the changes, we need to design new institutions. Work has always been organized in institutions of different kinds, and the jobs we have today are products of bundling based on the industrial society. The chief economist of Google, Hal Varian, has made the point that we will see more work in the future but fewer jobs, and his point is simply this: that the way we organize work is dependent on the structure of the society we are in. This does not just mean that we will necessarily devolve into what some have called the gig economy. It can mean many things, but it forces us to

examine our institutions closely. As biologist E O Wilson has noted, our challenge today is that we have stone-age emotions, medieval institutions, and godlike technology.

The tension between technology and institutions is real – and something that needs to be addressed.

The answers will develop over time. What is important is to find good answers and not devote all attention to fear of what we as mankind may create.

We will never know exactly in advance. That would be as impossible as to predict exactly when the next big recession will hit, and the future of financial activities is a rather simple issue when compared to solving the overwhelming question of the world tomorrow.

So, let us focus on work, not on jobs. It is very easy to miss the key aspect of the development if you ask the wrong question. The future of jobs is such a question that may lead to very misleading answers.

Let us for a moment return to Lord Keynes:

“The pace at which we can reach our destination of economic bliss will be governed by four things – our power to control population, our determination to avoid wars and civil dissensions, our willingness to entrust to science the direction of those matters which are properly the concern of science, and the rate of accumulation as fixed by the margin between our production and our consumption; of which the last will easily look after itself, given the first three. Meanwhile there will be no harm in making mild preparations for our destiny, in encouraging, and experimenting in, the arts of life as well as the activities of purpose. But, chiefly, do not let us overestimate the importance of the economic problem, or sacrifice to its supposed necessities other matters of greater and more permanent significance. It should be a matter for specialists-like dentistry. If economists could manage to get themselves thought of as humble, competent people, on a level with dentists, that would be splendid!”

(John Maynard Keynes [1930])

Back in 1930, Keynes predicted that the working week would be drastically cut, to perhaps 15 hours a week, with people choosing to have far more leisure as their material needs were satisfied. The world was then gripped by a dreadful slump, but in the long run Keynes was convinced that mankind was solving its economic problems. Within a hundred years, Keynes predicted, living standards in “progressive countries” would be between four and eight times higher and this would leave people far more time to enjoy the good things in life.

Keynes had been working on “Economic Possibilities for our Grandchildren” before the Wall Street Crash of 1929, but finally published it a year into the crisis. Given that the world was part of the way through a downturn unparalleled before or since, it was a brave call to say it was “only a temporary period of adjustment,” but as it turned out he was absolutely correct. Living standards in developed western economies have seen rapid growth.

But Keynes also got it spectacularly wrong. Rising living standards have not led to people deciding that they can satisfy their material desires through a much-truncated working week. The number of hours worked in the United States has remained pretty much steady for decades, and is 30% higher than in Europe. Europeans tend to use up all their holiday entitlement; Americans, even though their vacations are shorter, do not. Workers in the west are told to work longer and harder to meet the brutal competitive challenge from the east. If Keynes was right about a life of leisure, more of us would be working four-day weeks. As it is, the trend is in the opposite direction.

There are many voices that warn us about the death of jobs without asking the right question about the future of jobs. The mistake Keynes made is repeated by many wise persons today.

One factor at play here is the difference between societies that have a backward-looking perspective – once upon a time there was this very stable economic environment – and those who are more forward oriented. “Look at the 1950s in the United States. Then everything was fine!” is a message heard a lot in the political debate on the American side of the Atlantic.

This is a view that is also not uncommon in Europe, even if change seems to be more easily accepted here.

Let us look at my own country. Sweden is a small country with some 10 million inhabitants. Even if there are sometimes also here backward-looking, nostalgic voices, our national experience is the opposite; to accept change in ways that create new prosperity that will be shared widely. Research has shown that in Sweden we are more individualistic and have more rational, secular values than in any other country. The secular countries in the northwest of Europe are in their own corner of the global cultural map, with Sweden as the most extreme.

In late 2017 the *New York Times* reported: *The Robots are coming, and Sweden is Fine*.

This was an interesting and challenging message that obviously attracted a lot of attention as it was against the mainstream current in the US debate.

"In much of the world, people whose livelihoods depend on pay checks are increasingly anxious about a potential wave of unemployment threatened by automation. As the frightening tale goes, globalisation forced people in wealthier lands like North America and Europe to compete directly with cheaper laborers in Asia and Latin America, sowing joblessness. Now, the robots are coming to finish off the humans.

But such talk has little currency in Sweden or its Scandinavian neighbours, where unions are powerful, government support is abundant, and trust between employers and employees runs deep. Here, robots are just another way to make companies more efficient. As employers prosper, workers have consistently gained a proportionate slice of the spoils — a stark contrast to the United States and Britain, where wages have stagnated even while corporate profits have soared."

This very positive and not incorrect view was then commented on by a member of the Swedish government: "In Sweden, if you ask a union leader, 'Are you afraid of new technology?' they will answer, 'No, I'm afraid of old technology,'" says the Swedish Minister for Employment and Integration, Ylva Johansson. "The jobs disappear, and then we train people for new jobs. We won't protect jobs. But we will protect workers."

"Eighty percent of Swedes express positive views about robots and artificial intelligence, according to a survey this year by the European Commission⁶. By contrast, a survey by the Pew Research Center⁷ found that 72 percent of Americans were 'worried' about a future in which robots and computers substitute for humans."

Is this too bright a picture? Will it change? Nobody can tell today but judging from history those who are willing to embrace development rather than try to stop it, tend to do better in the long run. Both employers and their organisations, as well as trade unions and their members, know that cooperation for a brighter future is a necessary road ahead.

A Swedish trade union economist, Fredrik Söderqvist, has explained the context in an essay for the European center-left think tank Policy Network:

"Swedish (and Nordic) trade unions are possibly the greatest proponents of structural change in the world. This may be explained through the institutional history of Sweden's labour market, which developed in the wake of the conflict-ridden early 20th century, into the largely codetermined labour market regime of today.

⁶ <https://ec.europa.eu/digital-single-market/en/news/attitudes-towards-impact-digitisation-and-automation-daily-life>

⁷ https://www.pewinternet.org/2017/10/04/automation-in-everyday-life/pi_2017-10-04_automation_o-01/

The 'Swedish model' is not a static or stable concept, but one that is constantly evolving and adapting to prevailing conditions in the labour market. As most of the Swedish labour market regime is regulated by contracts, collective bargaining parties are relatively unconstrained to solve challenges deemed important for a well-functioning and competitive labour market.

The Swedish example shows that complicated issues within the labour market may be solved at the bargaining table, given that bargaining power between labour and capital is relatively equal. If more countries recognise the key role of trade unionism in solving the challenges ahead, then the transition to the new digital economy may prove less turbulent."

From Söderqvist's perspective it was of course not important to mention the fact that there are two sides at the bargaining table. During all the years that we now can evaluate the experiences and effects of what is known as the Swedish Model, it is an important fact that participation in the public debate by representatives of the employers' organisations, based on high-quality and widely respected research, has been very important and has strengthened the process to create a stronger, more viable economy.

The point about the future of work is of course not that all outstanding issues are already solved, nor that they are easily solved, but an active participation in the public debate is important also for employers' organisations. The labour market partners will have to rethink a lot of previous positions during the time to come. But there is no need to fear the future, no need to claim that the future is pitch-black, because that simply is not true. History tells us that challenges can and will be overcome!

5. Summary of the conference and its four themes, speeches and debates

Berit Kvam,
Editor-in-Chief
Nordic Labour Journal

5.1 Skills are a necessary precondition

The Swedish Minister for Employment and Integration, Ylva Johansson, delivered the opening lecture. One of her key points was that the Nordic model has proven to be very flexible in the face of change. She explained this by pointing out that when it comes to the labour market, the Nordic model rests on three pillars that are important in times of change:

- Strong, independent partners who regulate major parts of the labour market through collective negotiations and agreements on wage formation and other important labour market issues;
- The countries are well protected during change, secured through labour law, security in times of cuts to the workforce and education opportunities. We have good tools which make it possible for more people to get back into work after times of change;
- Nordic countries enjoy strong welfare systems with good parental- and sick leave provisions.

Sweden does not fear unemployment, but fears a labour market that is unsustainable in the long run, said Ylva Johansson.

She pointed to the great challenges around the needs for skills and life-long learning. This depends on politicians shouldering their share of the responsibility for the development of skills, she said, although this alone is not enough.

Politicians must act, but the initiative must also come from the individual worker, from educational institutions, employers and employees – all of whom have a role to play. Minister Johansson stated that success depends on establishing a shared responsibility and cooperation between financing and organising.

Read the opening address on page 13.

5.2 The future of work and the Nordic model: lessons and new challenges

Although there are great uncertainties linked to the future of work, we can safely predict that if we carry on as we are, job polarisation and unfair income differences – pushed forward by the uneven distribution of productivity gains – will continue to be issues defining the future. These labour market changes could have serious social and political consequences, according to the ILO.

Sangheon Lee, Director of the ILO Employment Policy Department, set the tone at the conference by presenting the background to the ILO's Centenary Conversation. He continued by exploring what can be learned from the Nordic models in the face of future challenges.

The Nordic model is a good example that shows how new realities best can be addressed together by social partners and governments.

The ILO introduction concludes, "Many driving forces help shape the future: technology, demography, climate change and globalisation." To fully exploit the potential offered by these megatrends, it is important to understand how things develop and the impact this has. Technological change is one of the most important themes when it comes to the future of work, and is subject to lively debate in many countries, including the Nordic ones. New technology presents both opportunities and risks, and the final result depends a lot on how we use efficient policies to shape the necessary transition for businesses and working life. The ILO also highlights how climate change, demographical changes and globalisation represent considerable challenges for the sustainable welfare state.

Moving to new and different jobs can be a challenge for workers. To keep the related social and other costs as low as possible, it is important to place workers centre stage in the political development. There is a need to invest in people. You need to invest in learning in order to make sure people remain resilient and adaptable during their entire working lives. Investments are also needed in social safety systems and secure universal social safety nets. It is necessary to give people a voice and to invest in social dialogue. Finally, the labour market institutions need to be modernised and strengthened. Public employment services must be equipped with new technology that makes it possible to respond quickly to changing needs, and to become more efficient when it comes to finding people jobs.

Interestingly, investing in people is one of the main pillars in the Nordic model, which includes Denmark, Finland, Iceland, Norway and Sweden, said Sangheon Lee, who together with Martin Ostermeier from the Office of the Deputy Director-General for Policy at the ILO has written a section in this report.

Lee and Ostermeier concluded by pointing to some of the political challenges facing the Nordic countries:

While the Nordic model has been resilient and adaptable, history also tells us that previous success does not guarantee future success. The model also faces profound changes. Climate, technologic and demographic changes, as well as globalisation and migration are some of the major forces expected to affect the future of work in the Nordic countries. An ageing population increases pressure on the generous welfare spending and puts the sustainability of its public finances to a serious test.

The relocation of production and the replacement of workers by machines are distinct features of globalisation and technological advancement that put more pressure on the welfare state and may force countries to restructure their economic model. Moreover, the emerging new forms of (non-standard) employment allow for more flexibility in the delivery of goods and services, but this also requires a rethinking of current regulations, taxation and competition standards, as well as their representation by the social partners.

Lee and Ostermeier ended by stating that the Nordic region has seen the need to analyse the needs for potential changes to the future of work, and to adjust its policies accordingly. They referred to concrete ongoing studies, which are also mentioned in the introductions below.

Read the entire introduction from the ILO's Sangheon Lee and Martin Ostermeier on page 17.

5.3 Theme 1: How will the technological developments affect the labour market?

A key question during the first session was how new technology, such as artificial intelligence, digitalisation and automation, will influence the labour market. What do things look like in real life? And how can the Nordic countries help shape the future of work as digital frontrunners?

The debates tended to focus on the need for education and life-long learning, and on the fact that there is a mismatch between supply and demand in the labour market. The three speakers during this session, representing the OECD, McKinsey and the Norwegian Research Foundation Fafo, underlined the importance of investing in the development of skills and life-long learning to master the challenges presented by new technology, digitalisation and automation. Such an investment would allow the Nordic region to become a technological development frontrunner, as McKinsey's Jens Riis Andersen put it.

5.3.1 *OECD Setting the Scene. A presentation of the OECD's work on the Future of Work*

Three megatrends will influence the labour market. These are technology development, demography and globalisation, said Mark Keese, who heads the Skills and Employability Division at the OECD.

He set the scene by presenting what the OECD has been doing so far on "The Future of Work". The organisation is already well underway to producing its own report, which will not be based entirely on the OECD's own analysis of facts and numbers. The idea is to produce a report based on meetings and workshops, and in close contact with those who are impacted by the developments. The results will be presented in the Employment Outlook 2019, and will later be used in policy reviews.

Mark Keese highlighted three megatrends that influence the labour market:

- Technology development, for instance, measured in the number of robots;
- Demography, which influences development. Using Japan as an example, there are now two 16–64 year-olds to every person over 65. By 2050 it is estimated that the ratio will be 1:1, with one 65 year-old to every person aged between 16–64 years. That is the same number of retired people as those of working age;
- The third megatrend Keese highlighted was globalisation, measured for instance, by the extent to which private sector employment is supported by foreign demand.

Mark Keese and the OECD recognise that it is difficult to make forecasts when things develop as rapidly as they do today – be it about jobs that are threatened by automation, new forms of employment as a result of big data, new employment models, or increased inequality. According to the OECD, automation does not necessarily mean jobs will disappear, but they will become different. It is estimated that one-third of jobs in the Nordic region will become different.

From a gender perspective, considerable evidence points to women being the winners from automation. Women are more highly educated than men, so it is important to encourage more women to train and enter into the STEM sector: Science, Technology, Engineering and Mathematics.

The great challenge moving forward is to make sure there is investment in education and life-long learning – the move from rhetoric to action. Mark Keese had several ideas for how to make this happen. Read his introduction on page 29.

5.3.2 *McKinsey: Shaping the future of work in Europe's digital frontrunners – a Nordic perspective*

Robots and artificial intelligence (AI) could create growth in the Nordic region without creating increased unemployment, argued Jens Riis Andersen, a partner at the McKinsey management consulting firm. But this will require political action.

McKinsey produced a report for the Danish government on the effects of automation on the labour market. The report's conclusions were presented at the Stockholm conference.

In the report, it is underlined that if the Nordic governments create the right conditions, and this must happen soon, the Nordic region can become a digital frontrunner. It could replace all the jobs that disappear as robots and automation solve an increasing number of tasks. But to create new jobs, workers in the Nordic labour markets must also have the right skills in the future. McKinsey has created a skills index by comparing information from a range of surveys of skills levels in a range of European countries – including digital skills, problem solving skills and social skills. Nordic workers come top of this skills index. That means the Nordic region has a unique advantage, and if this head-start gets further support, the Nordic region can become or remain a digital frontrunner. But this depends on two political drivers, according to McKinsey: “The workforce must be educated for this, and a political framework must be created with the aim of stimulating the development of new, technology-driven jobs.”

5.3.3 “The future of work: opportunities and challenges for the Nordic models”

How we are influenced by technology depends on how the market, institutions and people act. We are not helpless in terms of technological change, argued Jon Erik Dølvik from Fafo.

Research leader Jon Erik Dølvik, from the Research Foundation Fafo, the Norwegian Institute for Labour and Social Research, heads the Nordic Council of Ministers' research program on the future of working life. The first report that the research group will submit is about the drivers for development. He demolished the narrative about all of the workplaces that could disappear. How we are influenced by technology depends on how the market, institutions and people act. We are not helpless in terms of technological change. We decide through our political, economic and social institutions how technology will affect development.

Working life is affected by demographic changes such as aging and migration, which interact with globalisation, urbanisation, climate change, EU development and changes in our values, norms and ideas. Such driving forces rarely work in the same direction or the same way in different countries. Globalisation and the role of the EU can be both larger and smaller, but a common trend in recent decades is that the differences have increased in most of the Nordic countries, argued Jon Erik Dølvik.

Dølvik proposed the following research questions to address: How will work and working life change in the future? Will new technologies destroy large numbers of jobs and propel joblessness, or will rising productivity spur the creation of more, new, and better jobs? Which kinds of work and skills will decline, and which will grow? How will the changes affect labour markets, work environments, employment relationships, and the regulation of working life? Will the Nordic model become a casualty or a resource in the changing future of work? These are the kinds of questions the project *Future of Work: Opportunities and Challenges for the Nordic Models* is examining. Funded by the Nordic Council of Ministers and organized by Fafo in cooperation with approximately 25 researchers from all five Nordic countries, a central aim is to provide policy and actor-oriented knowledge and contribute to public debates, exchange of ideas, experience, and learning across the Nordic boundaries. Read more about Fafo's research on page 51.

5.4 Theme 2: How are the Nordic countries preparing for a more digitized and automated labour market?

The labour market partners will have to rethink a lot of previous positions in the future. But there is no need to fear the future, no need to claim that the future is pitch-black, argued Carola Lemne, Director-General of the Swedish Confederation of Swedish Enterprise.

"Today the key word is not automation but digitalisation, and the fear expressed by many is that jobs for everyone, and hence a widely spread out system of wealth, will be only a page in the history books," stated Carola Lemne.

Lemne then went on to say,

"But mankind owns not only the present but also the future. If there is a single crucial thread that has persisted through human history it is the importance of cooperation. This allows communities to accomplish tasks that individuals working alone cannot. In modern times the most effective way to coordinate behaviour has been through a market economy where individuals and companies act on markets, and where utilisation of comparative advantages, competition and price mechanism are the key factors. The opportunities are developing and there is no doubt that the positive implications for mankind are great if one accepts that change is an inevitable part of human progress, and acts to achieve the most favourable outcome of progress."

The ILO emphasised in its introduction the need for the labour market to modernise its business, stating “Labour market institutions need to be modernized and strengthened. Public Employment Service, PES, must be equipped with technology that enables responders to respond quickly to changing needs and become more effective in finding jobs for people.”

On the topic “How are the Nordic countries preparing for a more digitised and automated labour market?” representatives from the Danish, Swedish and Norwegian national employment agencies explained how they have begun changing their focus and internal workings in order to prepare the national Nordic job centres for a more digitalised labour market. Artificial intelligence (AI) and robot technology can improve the quality of how Nordic countries’ employment agencies operate, but it also presents the authorities with new challenges, including data security.

It is not only employees who need to develop their skills in the face of the new digital reality. The efforts of countries to help unemployed citizens find work must also be adapted to the changing times. This process is already well underway in the Nordic countries. It can improve the way people are matched with jobs, but the change is challenging. That was the joint message from the national employment agencies in three of the Nordic countries, Denmark, Sweden and Norway, reported the Nordic Labour Journal’s correspondent Marie Preisler from the session. Read more on page 99.

5.5 Theme 3: How are enterprises and industries affected by technological developments?

5.5.1 *Technological development affects the whole labour market*

At the conference Berta Daníelsdóttir, CEO at the Iceland Ocean Cluster, told the story about how the Icelandic fishing industry has been affected by technological developments. She stated that Iceland’s fisheries industry has undergone a revolution in recent years. Fishing companies and tech firms have worked together to develop high tech solutions and it is nowadays widely known that Iceland is a global leader when it comes to developing fish processing technology. Read more about the technological developments in the Icelandic fishing industry on page 102.

Both Dennis Helfridson, Vice President Manager Business Unit Robotics and Maria Brithon-Brinck, Country HR Manager from ABB as well as Dennis Nobelius, CEO Zenuity participated at the conference giving their view on how companies and industries are affected by technological developments.

5.5.2 *Panel debate: What challenges and opportunities shape the technological development of the future labour market?*

Politicians, social partners and international experts are strong believers in the ability of the Nordic model to deal with major technological change. Despite the big challenges, the panel debate ending the conference's first day was optimistic, reported our Swedish correspondent, Gunhild Wallin, referring to the high-level panel participants.

5.6 The future challenges and opportunities brought by technological development to the future of work.

Written by Gunhild Wallin
Journalist, Nordic Labour Journal

Politicians, social partners and international experts are strong believers in the Nordic model's abilities to deal with major technological change. Despite the big challenges, the panel debate ending the conference's first day was optimistic.

"I have been to many conferences on the future of work, but never to one that has been this optimistic. I feel like I'm in a 'wonderland' here," said Sangheon Lee, the Director of the Employment Policy Department at the ILO. He was one of the participants during the panel debate "The future challenges and opportunities brought by technological development to the future of work."

At the end of day one, the distinguished panel summed up the future challenges brought by the rapid technological change to future labour markets, but also what opportunities the technology brings. Another issue was how the Nordic countries best can work together to deal with the impact technological advances might have on the Nordic model – both when it comes to the labour market and welfare.

The conversation, led by moderator Darja Isaksson, included Sweden's Minister for Employment and Integration, Ylva Johansson; Mark Keese, Head of the Skills and Employability Division at the OECD; Sangheon Lee, Director of the ILO Employment Policy Department; Carola Lemne, Director-General of the Confederation of Swedish Enterprise; Ulrika Lindstrand, President of the Swedish Association of Graduate Engineers and Vesna Jovic, CEO of the Swedish Association of Local Authorities and Regions.

5.6.1 *We have managed technological change in the past*

The Swedish Minister for Employment and Integration, Ylva Johansson, also had a positive attitude to the challenges digitalisation brings to the future of work.

"We should not be so scared about the future. The Nordic countries have already managed many major technological changes with the help of the models of cooperation within the Nordic model. So there is every reason to have a positive attitude," said Ylva Johansson.

Yet she also underlined the importance of rolling up one's sleeves. Dealing with the changes that will be demanded of us in the future will not be easy. It means hard work and innovative thinking.

"In the Nordic countries, we are uniquely good at managing changes, but so far it has been about recovering from periods of unemployment. Now we must manage changes while we are in work, and the question is how to transfer our experiences from the one to the other. We are not quite there yet," said Ylva Johansson.

5.6.2 *Everyone must take part*

She also pointed to how things are developing. More and more people work both as self-employed while being on contract with one or several employers. One of the challenges facing trade unions now is how to find ways of organising these "combiners" to prevent them from falling outside of the traditional labour market. Welfare systems must also keep up with the development of the labour market, which is not quite the case today. Ylva Johansson also pointed out that it is important that everyone gets a share of the gains that technological development, innovations and globalisation can bring.

“That is necessary if you want everyone to want and dare to take part in the journey towards the future. This is about wages, but also about the welfare system. And all of this must be dealt with while the nature of the labour market is changing as a result of migration,” said Ylva Johansson.

Sangheon Lee from the ILO echoed her thinking. During the economic crisis in the 1990s he was doubtful the Nordic model would survive – but it did. The Nordic countries are small with open economies, but in order to manage this openness you need social security, pointed out Mr Lee. The social safety nets, social dialogue and solidarity that characterises the Nordic model make it easier for employees to face the new technology without fear.

“Your model manages to motivate and fuel innovation, but the mobility we are witnessing today could be a threat to solidarity, and there is also the question of whether migration is leading to cracks in the system,” said Sangheon Lee.

5.6.3 *New technology has created more jobs*

Carola Lemne from the Confederation of Swedish Enterprise used fresh statistics to support her own optimism. Every year the employers’ organisation carries out an economic cycles survey among their members. This year, for the first time, the 30,000 participating companies were asked about the impact of digitalisation on their business, and what it means. New technology has an impact on 100% of the big companies, and 83% of small and medium companies. What is surprising, according to Carola Lemne, is that the technological development has not led to job losses. Indeed, the survey draws the opposite conclusion. The majority of the surveyed companies have been able to develop their services because of new technology, and have been able to hire more people. They have not been forced to lose people, which is often the assumption.

“The problem is weak matching. We face a considerable labour shortage, while at the same time many are unemployed,” Carola Lemne said.

Mark Keese from the OECD was not quite as optimistic about the development as his fellow participants.

“If we imagine that the platform economy really takes off and there will be more so-called ‘gig workers’, we face a future with a more fragmented labour market and greater gaps. This is a major challenge to the Nordic model. Sweden has also welcomed many migrants, but it is not easy to integrate that many people without it impacting on the status quo,” said Mark Keese.

What will happen if more and more people join the platform economy? How do you protect them, and who will make sure “gig workers” get the skills development they need?

5.6.4 *The social security systems are being challenged*

The platform economy challenges the social security systems and the question is whether they can remain sustainable. How can we make sure the system gives something back to people who have not benefited that much from the changes?

Mark Keese also highlighted another challenge – how do you make the road to work shorter?

“Young people are entering the labour market late, and this is not efficient. They should be given the opportunity to get in touch with the labour market at a younger age, with more opportunities for further training. Another challenge is to tell people not to be afraid of technological change – especially not if all the neighbouring countries stand together and make this clear.”

What can the Nordic countries learn from each other, and also from other countries?

“You have a successful history of creating your own path, and others are following you – not the other way around. So I don’t know how much you can learn from each other,” said Sangheon Lee.

Mark Keese pointed to Singapore and Great Britain. Both countries are actively encouraging women to seek careers in technology, science and mathematics, while gender gaps within these key areas are increasing in the Nordic countries.

“This is confusing, and this is an area where it is possible to learn from each other. One way is to start early. Great Britain, for instance, has launched an online guide for parents about girls’ futures, in order to get them interested in technology, science and maths. Hungary and Germany are doing similar things. They are fighting the stereotypes,” said Mark Keese.

Ulrika Lindstrand, President of the Swedish Association of Graduate Engineers, agreed that it was necessary to start with the base, i.e. youths – and not least with young women – showing an early interest for technology, maths and science.

“There is a skewed narrative about things being too difficult, and that many young women do not have enough self-confidence to apply for technical educations. Together with The Royal Swedish Academy of Engineering Sciences IVA, the Association of Swedish Engineering Industries and others, we try to highlight good role models for young women.”

5.6.5 *Life-long learning*

She also said it was important that universities come up with new ideas for how to describe various courses. What woman would be tempted to become a road and water engineer, or would seek an education in energy technology, for instance? But if the same courses were called social architect and green change, they might become more attractive and create interest among all the young women who want to help build a better society, because there will no doubt be a need for engineers in the digital and high-tech world that was described during the two days the conference lasted.

“We are dependent on export and innovation, and everything we talk about here today is engineering solutions. We live and breathe this, and are so dependent on them.” Ulrika Lindstrand believes the interest for tech and science subjects must be ignited as early as in primary school, and it must in turn build the self-confidence and introduce the right preconditions needed in order to manage a basic education. She also pointed to the importance of life-long learning.

“We must become better at what we are already doing, so that you don’t arrive at work to discover that what you knew yesterday is no longer enough. But there is no quick fix here. One of the things that needs looking at is education financial support systems,” she said.

Carola Lemne, from the Confederation of Swedish Enterprise, underlined the importance of change among both businesses and individual citizens. In the survey carried out by the Confederation recently, between 20 and 25% of businesses said they had failed to recruit people to run existing services. Like Ylva Johansson and Ulrika Lindstrand, she wanted to see retraining opportunities for those who are in work, and not only for the unemployed.

“We need a more flexible labour market, and the key question is how we get people to dare to change jobs,” said Carola Lemne.

5.6.6 *Rigid universities*

She wants to see changes to the education system. She did praise “Yrkesvux” – a form of education introduced by the current government to target adults looking to change occupations – but it is not enough. Carola Lemne wanted to see what she called “half-soling”, meaning giving someone the opportunity to build on their existing knowledge in the labour market. But the education system is out of step with the needs

of individuals' and businesses. Universities are too rigid and do not follow up the need for shorter courses, which modern society calls for.

"Universities move in the opposite direction. The way universities are run and awarded is a real challenge that must be solved in unison, and the state plays an important role in this," said Carola Lemne.

Ulrika Lindstrand is well aware of the fact that her members constantly need to top up their skills and knowledge if Sweden is to be a world leader. She too believes universities are too rigid when it comes to the needs of individuals and businesses, and that things are moving in the wrong direction to boot. This is something universities are well aware of too, but the finance model is not geared towards shorter courses. What is more, it takes several years to secure the quality even of a shorter course. Swedish engineers have met with different universities to discuss the problem, and a report is due later this autumn.

Ylva Johansson also mentioned the need to change the economic incentives for universities and university colleges.

"We cannot have a resource allocation system which steers us away from the skills development the labour market needs. The regulatory system will be changed," she said.

5.6.7 *A necessary digitalisation of the welfare sector*

The last speaker during the panel debate was Vesna Jovic, CEO of the Swedish Association of Local Authorities and Regions. There is massive interest and a great need to make use of technology among municipalities, not least when it comes to the welfare and care sector.

"Digitalisation is nearly a prerequisite for managing welfare in the future, since we are facing these massive demographic challenges," she said.

In the next ten years, the number of young people in Sweden will grow by between 17 and 19%, and the number of older people will increase by 40%. Meanwhile, the number of people of employable age will increase by seven%. This means there are not enough people to carry out the work that needs doing. Vesna Jovic calls it an enormous challenge, but with the help of digitalisation is a solvable one.

"Digitalisation is a prerequisite, but it will challenge all parts of the welfare state – politically and all the way down to the level of the individual employees. We will need to look at organisation, management and regulatory frameworks. We will also need to involve citizens and cooperate with businesses and other players. It is a gigantic challenge for the public sector and we have started working on this."

So how can the Nordic countries use the technological development to their advantage?

Vesna Jovic said a key factor was to start with the needs of the citizens, but to also consider what is being done today. Are we doing the right things?

"This has given us the chance to think outside of the box when it comes to the way we are working, and to try to take this to new levels. We will need a lot more knowledge about how we work with digital information, and which tools we need in order to achieve what we want and need to do. The big issue is not IT, however, but how we change the way people operate. And what do immigrants expect of us?"

5.6.8 *Sharper Nordic cooperation can bring benefits*

New competencies will be needed as a consequence of digitalisation, perhaps aimed at areas we yet do not quite know – for instance engineers who understand the different flows of technology, but also experts in ethics and law. According to Vesna Jovic, it is also a question of whether young people have different expectations from leadership, and whether you need younger workers in order to lead and drive change.

Vesna Jovic believes sharper Nordic cooperation on technological developments could be a major advantage. She would like to see more collaboration on things like standardisation and shared policies. This would strengthen growth and increase the opportunity to sell digital solutions, but also knowledge of how we have constructed our public sector.

"There is a lot of international interest in what we are doing," said Vesna Jovic.

Among the conference's themes was the impact of digitalisation on the Nordic model, but also how cooperation between the Nordic countries can help technological development. This also coloured the panellists concluding comments. These were as optimistic as the introductory statements.

"What we in the Nordic region can do is to defend the Nordic model. Few realise how different we are with our social dialogue, and the rest of the world looks different. We benefit from sticking together to develop this – it has to be said – successful model, for instance in order to stand up to some of the things the EU comes up with," said Carola Lemne from the Confederation of Swedish Enterprise.

5.6.9 *Not afraid in the face of change*

Mark Keese from the OECD predicted a bright future for the Nordic countries after listening to the first day's talks.

"One thing is very clear. You are small, innovative and have strong social partners. You also have an educated labour force, you have the ability to change rapidly and you are prepared to learn from others. The key is that you are not afraid in the face of change, so you should be optimistic and make sure you look after the technological changes."

Ylva Johansson pointed to the importance of the Nordic model, where a lot is solved through agreements between the social partners. This means changes can be embraced quickly.

"So it is a good model to stick to. We can, however, accept some criticism of how we have been implementing new technology in the welfare sector. This has not improved working life, but brought more red tape and more work because they were not introduced in response to what the sector actually needed. Bad experiences from this can lead to resistance to new technology. That's why it is important to make sure new technology benefits both the user and those working in the sector."

Ulrika Lindstrand, from the Swedish Association of Graduate Engineers, also expressed high hopes for the Nordic countries' ability to adapt to a more digitalised society.

"We have faced difficult technological changes before. I am convinced we will manage this. As long as we stick together and cooperate, we will solve this with our existing models. I am convinced."

5.6.10 *One generation from now*

Darja Isaksson finally asked the panellists to look into the future and predict how the Nordic model will be seen one generation from now.

"One generation from now, people who live here will not only think of the Nordic model or the neighbouring countries, but they will be in contact with many other countries. They will show more openness towards different cultures and ways of living. The Nordic model is a good example, but it is also important to see that there are many other ways of solving problems. And that is one of the positive things about the new technology – it is easier to adopt other people's knowledge," said Mark Keese from the OECD.

Vesna Jovic, from the Swedish Association of Local Authorities and Regions, also predicted more openness.

"I believe the next generation to a greater extent will consider themselves to be global citizens, and that they will not think in terms of countries or limits.

"I want a labour market which is characterised by economic efficiency, morals and solidarity, and these are the things the Nordic model combines. So if we understand the Nordic model in that way, I want my children to move here."

Carola Lemne, from the Confederation of Swedish Enterprise, pointed to the fact that reality after all moves slower than technology, and therefore the regulations must do the same.

"One percent of the workforce work in the gig economy today, and that kind of change happens slower than over one generation. But the Nordic model does need to be kept alive, and we must upgrade ourselves. If we don't, it becomes part of social studies."

5.6.11 *Young people with poor knowledge of the model*

Ulrika Lindstrand highlighted a problem she is already experiencing.

"Many young people today don't know what the Nordic model is, and there is a certain lack of common memory where we no longer know what is behind our safety and privileges, or understand the work needed to maintain it. We do see that now, as a new labour market with new types of employment is emerging. That's why it is important to get those workers into the safety systems, so that they don't end up being outsiders. If we take the model for granted, we do not appreciate it and it might collapse."

Ulrika Lindstrand also sees empathy and pathos among young people she meets.

"They will demand a different welfare distribution, and do not accept that others must slave away in order for them to be able to buy jeans, or to be in a working environment where the roof might

fall on your head. There is an awareness there which will grow as people travel and with new ways of communicating. My hope for the future is that we will discuss ethics and sharing and look after each other.”

Ylva Johansson was given the final word, and ended on the same optimistic note as she started. The Nordic model has proved to be able to deal with change, and has prevailed while keeping the same building blocks of trust, competitiveness and flexibility. It is an open economy which embraces change, she said.

“A lot has changed in our lives and in our working lives, but there have not been very big changes to the way we organise things. This is a credit to the model. I am surprised by the optimism, and dare believe we face a safe future. We will manage this very well.”

5.7 Theme 4: Skills and the Future of work

5.7.1 *Continuous learning, technology and digital skills*

During this session there were different presentations and approaches regarding continuous learning and digital skills. Matti Kajaste, Counsellor of Education at the Finnish Ministry of Education and Culture made some conclusions from a working group with focus on future competences in Finland. He was followed by Iarla Flynn, Director of Public Policy and Government Relations at Google who focused on technology and the future of work (read more on page 109). The first session was ended by Jens von Axelson, Program Manager at The Swedish Agency for Economic and Regional

Growth who had focus on the need of digital skills for employers with a starting point in the Smart Industry. Read more on how new technology is introduced into the workplaces on page 106.

5.7.2 *The second wave of digitalisation: The skills needed for older and unskilled workers*

“We must create jobs for both highly-skilled and unskilled people when the second wave of digitalisation empties many occupations of content,” says Camilla Tepfers from the Norwegian consultancy firm InFuture.

She has been interviewed in an article written by The Nordic Labour Journal's Björn Lindahl, with reference to how seniors will tackle the technological challenges. "We are at the beginning of the second wave of digitalisation. The first was dot.com. The second wave is about machine learning."

"When machines can learn, they can perform tasks which we until recently believed humans alone were capable of," says Camilla Tepfers, who has looked at what will happen when digitalisation is developed further. At the same time, she says it is worth remembering that the prognoses are not always right.

"We see analyses which estimate that one in three jobs in Norway and Finland are highly likely to be taken over by technology in the next 20 years; in Sweden the number is one in two jobs. But this kind of analyses focus more on what will become technologically possible – not on whether it will actually happen," said Camilla Tepfers. See page 111.

5.7.3 *"We need an informed debate about digitalisation"*

80 year-olds have considerably more life experiences than 40 year-olds, yet older people are treated as a homogenous group with no particular technological skills.

"This limits innovation and influences the shaping of welfare technology for older people," says Britt Östlund, a professor specialising in older adults and welfare technology at the KTH Royal Institute of Technology. Emphasising Östlund's work, the Nordic Labour Journal's Gunhild Wallin highlighted the impact of technological changes on work and skills. Britt Östlund was the closing keynote speaker at the conference "The Future of Work in the Nordic countries – the impact of technological development on work and skills," with her talk "Why the users' perspective is part of the problem." It was originally called "Focus on the users' perspective," but she changed it. In a conversation before the conference, she was also a bit disappointed that the focus on the users of technology was last on the programme. "It is typical that the users' perspective of new technology ends up in last place." Britt Östlund, is totally opposed to the word user when it comes to the application of welfare technology. It has completely the wrong connotations and is a provocative term, she believes. See more on page 116.

5.7.4 Panel debate day 2: Responsibility for competence provision divided between three parties

"What kind of change is needed, and who takes responsibility?" That was the theme for the final panel debate during the two-day conference on the future of work.

Much hope was pinned on the Nordic model during the conference, and also during the concluding debate, to manage the challenges of the future. Life-long learning is a necessity, and it demands systems for change and skill development also for people currently employed. The responsibility for life-long learning is divided between three parties – companies, the state and individual workers.

The panel was composed of representatives from the Swedish government and social partners.

5.8 What kind of change is needed and who should be responsible for providing new skills needed for the future labour market?

Written by Gunhild Wallin
Journalist, Nordic Labour Journal

What makes today's changes different from those of earlier times is their speed and the fact that they have an impact on the service industry. Life-long learning is a necessity, and it demands systems for change and skills development also for people who are already in work. The responsibility for life-long learning is divided between three parties – companies, the state and individual workers.

"What kind of change is needed, and who takes responsibility?" That was the theme for the final panel debate during the two day-long conference on the future of work. The panel comprised representatives from the Swedish government and social partners. Much hope was pinned on the Nordic model during the conference, for it to manage the challenges of the future – also during the concluding debate.

Moderator Darja Isaksson started by asking about the difference between the changes we are facing now compared with what has gone before?

Irene Wennemo, State Secretary to the Swedish Minister for Employment and Integration, was the first speaker. She pointed out that technological change is nothing

new, and that the Nordic countries are open for this. They are aware of the need for restructuring and adapting their systems. What is new is the fact that these changes now also encompass occupations which were not traditionally exposed to the technological development – such as the more traditional trades within industry that have seen a continuous change. Take graphic designers for instance, whose job tasks have changed completely in ten years. What is new now is that the service industry and other sectors are also redefined and changed.

“For instance, we have long believed that ‘an assistant nurse will always perform an assistant nurse’s job, and there will not be any major productivity changes.’ But the welfare sector now sees technological solutions across the board. It is important for it to remain as open to change as, for instance, the industry sector. This is a challenge,” said Irene Wennemo.

5.8.1 *The 20th century is a history of change*

Samuel Engblom, Policy Director of the Swedish Trade Union Confederation TCO, wanted to place the ongoing technological change into a bigger perspective. Change is nothing new, but something that is constant.

“The entire 20th century is the history of change – some jobs disappear or are transformed, and new ones emerge. What we see now is that more jobs will undergo a greater change, perhaps over half a working life rather than an entire working life.”

This means skills become important, and that the need for skills development will apply to more people and new groups in the labour market – for instance within the service sector. The change will also influence the way in which work is organised.

“I also believe that our ‘peripheral systems’ – our labour market policies, our education system and our social security system – must change the way they work and no longer wait for people to become unemployed,” said Samuel Engblom.

For the Swedish Association of Local Authorities and Regions there is one overarching issue – the demography. The number of children and young people is growing, as well as the number of people over 80 years of age. At the same time the number of people of employable age is falling.

5.8.2 *A smaller labour force challenges welfare systems*

“This is a huge challenge for the welfare sector and the entire labour market. We will also see competition for labour. Old ways of working within the health, education and care sectors will not stand the test of time, and fresh thinking is needed in order to save the welfare sector,” said Agneta Jöhnk, head of department at the Swedish Association of Local Authorities and Regions, SKL.

She said there was a lot of interest in fresh thinking among municipalities. SKL has made it possible for municipalities to become members in Inera, a company that develops e-services and gathers digitalisation competencies. There is a lot of interest in this.

“Municipalities really need this, and are signing up as members in great numbers,” said Agneta Jöhnk.

Peter Jeppsson, Deputy CEO of the Confederation of Swedish Enterprise, pointed out that the Swedish labour market model has had the same “set up” since the 20th century, and that technological and structural changes have taken place within that framework before.

“What we see now is a more comprehensive change. The content of work is changing, as well as the traditional division between workers and employers. It is also new that you might be expected not only to change jobs during your lifetime, but even your occupation.”

5.8.3 *Lower trade union membership influences the model*

Other examples of change are new forms of employment, for instance more self-employed people.

“Falling trade union membership numbers changes the landscape for the Swedish model, since we are used to record-high numbers. It is also new that the EU is getting involved in labour market issues, and we are fighting this in the Nordic countries,” said Peter Jeppsson.

We will not see how big a difference there is between today’s changes and previous ones until later, reckoned Göran Arrius, Chairman of the Swedish Confederation of Professional Associations.

“When you are facing something, it feels very different to what you left behind. But I believe the changes we are facing now will influence many more people than before when it comes to the content of work and the way in which it is carried out. I also think changes will come in leaps, things will be happening within certain sectors.”

People used to be able to get an education which would last them a lifetime, but this is no longer the case.

“Today it is important to find an oasis where you can top up your education. But even more important, to stick to that metaphor, you need to keep your ‘canteen’ with you and top up your skills every day. We learn new things without thinking about it, after all. But regardless of how things develop, we need to find new systems for skills development which allow us to stand on steady ground.”

5.8.4 *Do bosses know enough?*

Several of the conference participants pointed to the importance of entrepreneurs and bosses being able to “look around the corner” to have a vision of where the company will be in five years’ time, and then work strategically with competence provision. Darja Isaksson put this issue to employers.

“Do leaders and other responsible parties have the competencies needed to move forwards and work strategically?”

“I think people choose to become politicians in order to run municipalities well, not to become employers. The employer part of it is therefore not what you talk about the most. But when you can no longer recruit enough people for all the jobs that need doing, I think there will be more focus on the employer side of things,” said Agneta Jöhnk from SKL.

Until now, municipalities have had a relatively easy job of recruiting labour, with the exception of certain groups. But lately they have started noticing a change. One solution is for municipalities to cooperate in what is known as municipal federations, which is already happening.

“If we cannot find the staff, we have to ask ourselves how can we use the competencies that we already have? And how can we complement these? We will reorganise the organisation to maintain a high quality, but with the correct use of competencies.”

There are resources available for retraining. There is a fund for early retraining, allowing municipal workers who are at risk of losing their job to train with the aim of finding a different job within the municipality.

Peter Jeppsson from the Confederation of Swedish Enterprise believes that “looking around the corner” is exactly what Swedish companies are good at, also

internationally. They do not react to developments, but often lead them, as seen in the cases of Spotify and Skype.

“Being able to look around the corner is a question of survival,” he said.

Peter Jepsson pointed out that there is a risk. It is easy to lose the more traditional part of the labour market in the shadow of high-tech, and he believed that we do not have enough low-skilled jobs.

“We must not forget the old just because we are good at all the new stuff,” he said.

5.8.5 *Skills development depends on cooperation between all parties*

Everyone seemed to agree that the rapid technological advances demand life-long learning. But the question is who carries the responsibility for making skills development happen? Darja Isaksson quoted new research that showed how companies are investing less and less in different forms of further education. Samuel Engblom from TCO pointed to a recent survey carried out by them, which showed the same. As many as 44% of the respondents said they did not get the skills development needed to manage their current jobs.

“Employers are responsible for providing the skills development needed for people to manage to carry out their job, and a visionary employer gives employees so much education that they can be part of driving the company forwards. The training needed to change trades remains the responsibility of the employee, and the state’s role is to provide the necessary infrastructure – for instance guidance, validation, a flexible education and financing,” said Samuel Engblom.

“Good terms and opportunities for retraining is alpha and omega if you want people to accept major change,” said Irene Wennemo from the Swedish Ministry of Employment.

“Employers, the state and the individual must take shared responsibility if we are to succeed in upgrading knowledge and manage change. Employers invest in knowledge they can use, they are not charities. But for them to do this, you need long term relations. There is no point investing in employees’ training if people just disappear,” she stated.

Irene Wennemo referred to a survey on product development that showed that weak employment contracts resulted in employers choosing not to invest in skill development.

"If you have more permanent relations, it is worth investing in training. This is an advantage that we have in Sweden and the other Nordic countries. We also have a good basic education system, which means further training 'sticks'."

5.8.6 *Bad employment conditions mean less further training*

She wanted to see a better education system and economic incentives for older people – such as having the opportunity to work part time, being able to be absent from work to attend short courses and to be able to manage economically during times of further education, even if you are older.

"If you have a good basic education to fall back on, further training does not have to take very long."

But what happens then to the increasing trend of being self-employed, wondered moderator Darja Isaksson.

"We have had flexible systems for how to manage various challenges, and we just have to follow up and see how we manage the challenge of platform jobs or self-employed people. We must avoid ending up with a low-salary proletariat," said Irene Wennemo.

Samuel Engblom from TCO was more worried about the future of the growing number of temporary workers, than that of the platform workers. Temporary contracts are increasing in number, and the shorter the job the worse the chances of further education. This group is not found in the platform economy, but are usually called in to perform short contracts via text messages. These temporary jobs do not lead to permanent jobs either, according to surveys.

"Don't think taxi drivers, think retail, home care, the hotel and restaurant trade. These are all technologically driven jobs."

5.8.7 *Big differences in employers' views on skills development*

The panel got into a debate on what constitutes job security today.

"Job security today is not to stay in the same job until you retire, but knowing that my competencies will make sure I can find a new job if I lose the one I've got. And if that proves difficult, I will get help to retrain," said Peter Jepsson.

The question is also what should be learned?

"The skills that are needed are what can be done with advanced IT, to create competitiveness through learning how to utilise the technology," said Samuel Engblom.

Göran Arrius from the Swedish Confederation of Professional Associations raised the various views of employers on skills development. Some like to be given a certain pot of money every year, regardless of their needs and without any particular strategy, while others see skills development as something strategic and take what it costs.

"I am happy when I meet one type and worried when I meet the other," said Göran Arrius.

In the public sector, with its 1.2 million employees across 600–700 occupations, the way in which skills development is implemented varies according to occupation and sector. The health and care sector, for instance, employs mostly graduates, and has special training facilities for the further education and training of employees.

"There are big differences depending on what types of jobs you carry out. I believe we have much left to do within elderly care and within the education sector," said Agneta Jöhnk from SKL.

5.8.8 *Large groups make changes more difficult*

She also highlighted the fact that leaders within many care institutions and also in schools are responsible for between 40 and 60 employees, while numbers in the tech sector are considerably lower.

"Employers have a big responsibility here to make sure the leaders of change get a chance to execute their leadership jobs. You cannot do that with 50 to 60 people."

Irene Wennemo talked about big changes to the public sector, like the fact that an assistant nurse no longer needs to perform all the tasks alone. Perhaps a robot can deliver food to older people.

"Suddenly you have an enormous breakthrough for productivity development in the public sector. Much legislation determining the makeup of this sector has been abandoned, and it is important that we don't get stuck in old ideas of how welfare should be run. New welfare technology creates many new openings that we have not seen earlier," she said.

One audience member wanted to know whether there was a risk that skills development would become an issue for the star players in the workplace, that there might be a conflict between what the company needs and what society needs?

In Göran Arrius' experience there is not a single person who is not important. Peter Jeppsson agreed that no team is made up of star players alone. You need to focus on everyone. And for those who are in work, or who have lost their job, there are systems for learning and retraining.

"But you have a grey area with people who are employed, but need to move on up. This is an area for development where we need to be innovative, for which both society and individuals must take responsibility," said Irene Wennemo.

"I am not worried for those who feel the need to move on, but I worry a lot for those who do not think like that. How do we make them understand that they are living in times of change, where everyone must be ready to make changes," said Göran Arrius.

Samuel Engblom pointed out that things do not necessarily move faster and faster. In some sectors this is the case, like in the media world, but changes in other sectors happen a bit more slowly.

"In times of change, we also have the advantage in the Nordic countries of having a flatter workplace structure with collective decision making – you can tell the boss whatever you like. That dialogue is a great advantage, which we can share with others."

6. How are authorities and industries affected by the technological development and the needs for skills?

The following articles, written by the Nordic Labour Journal's reporters, are examples of how the industry is adopting new technology. There are also interviews with researchers, employees from employment agencies, recruitment firms and trade unions.

6.1 Digitalisation means new opportunities for Nordic employment agencies

Written by Marie Preisler
Journalist, Nordic Labour Journal

Artificial intelligence (AI) and robot technology can improve the quality of how employment agencies in the Nordic countries operate, but also presents the authorities with new challenges – data security being one.

It is not only employees who need to develop their skills in the face of the new digital reality. The efforts made by countries to help unemployed citizens find work must also be adapted to the new times. This process is already well under way in the Nordic countries. It can improve the way people are matched with jobs, but the change is challenging.

That was the joint message from the national employment agencies in three of the Nordic countries: Denmark, Sweden and Norway, which were represented at the conference "Shaping the Future of Work in the Nordic Countries – the Impact of Technological Development on Work and Skills."

On the topic of “How are the Nordic countries preparing for a more digitised and automated labour market?” representatives from the Danish, Swedish and Norwegian national employment agencies explained how they have begun changing their focus and internal workings in order to prepare the national Nordic job centres for a more digitalised labour market.

6.1.1 *The transformation has started*

In Norway, the Norwegian Labour and Welfare Administration (NAV) is the responsible employment authority. NAV has initiated major changes in order to make the best use of the new opportunities that digitalisation brings and to strengthen measures designed to help unemployed citizens, explained Gunn-Elin Åsgren, project manager at NAV:

“Right now a comprehensive transformation is taking place in Norway’s public administration to keep up with this development,” she said.

Denmark also considers adapting employment measures to digitalisation to be a major priority, said Peter Truels Nielsen, division head at the Danish Agency for Labour Market and Recruitment, which is responsible for implementing and following up employment policy in Denmark.

He referred to a report from the international consultancy firm McKinsey that predicts that 40% of current working tasks can become automated as a result of AI and robot solutions. He concluded that we are in a good place to begin gearing employees and the labour market to this new reality, although it will mean major changes – including to the concrete ways in which the national Danish employment agency works.

“We have a good starting point, but when 40% of our present working tasks can be automated, several hundreds of thousands of workers might become superfluous. So we are standing on a burning platform and need to find new solutions,” said Peter Truels Nielsen.

6.1.2 *Countries can learn from each other*

Employment measures are highly prioritised by all of the Nordic countries. And although measures are organised differently in each country, there are many similarities and opportunities to learn from each other. This sharing of knowledge was an important aim for the conference.

One important element to the Nordic countries’ employment drives is to maintain a close dialogue with businesses about what kinds of workers and skills they need, and to

introduce the businesses to unemployed people who have the skill profiles that match the businesses' needs. Another important element is to prepare unemployed people for work by offering them job seeking training, and to motivate and help them seek jobs in sectors where there will be good job opportunities in the future.

For both types of tasks, national employment agencies need a good understanding of the impact digitalisation will have on the labour market, and job centres must actively make use of new technological opportunities. All the representatives from the Nordic countries who addressed the conference agreed on this.

They pointed to the fact that digital development can streamline some of the employment agencies' tasks, partly because measures can be better tailored through the use of more precise data and new technological solutions. This can for instance enable job centres to quickly and easily find relevant available jobs that are advertised on the internet.

At the same time it was considered important to be able to predict how digitalisation will affect which jobs will be available, and not least to be able to adapt employment measures to encourage and channel unemployed people into sectors that have growth potential as a result of digitalisation. It is also important to help unemployed people keep away from sectors where many jobs will become superfluous as a result of digitalisation.

6.1.3 *Projects on big data and AI*

The Swedish public employment service has introduced the JobTech model, which investigates how technology can be used to secure digital innovation within the employment sector, explained Jonas Södergren and Andreas Granström, both developers at JobTech.

"There is a need for completely new access to how we work, think and offer services to jobseekers. So we work more with data, support the jobseekers in building their own future and create an infrastructure which benefits everyone," said Jonas Södergren.

JobTech has several concrete projects on big data and AI. In one project, AI is being used in order to understand which skills are needed.

In Denmark, STAR has used digital solutions to analyse job ads in order to map which skills employers are looking for. This information has then been linked to which types of jobs workers are looking for, as robots and AI make their old jobs superfluous.

So far, the conclusion is that this type of data use can improve the work of the job centres, but it is not enough when job centres are trying to help jobseekers find work that matches their skills.

“It sounds simple, but it isn’t – and we need to be careful. When we advise people to seek a particular job, we need to take into account a range of issues,” said Peter Truels Nielsen.

6.1.4 *The need to protect personal data*

Norway’s national employment agency, NAV, has also accelerated its gathering of data and development of new services that can be used in analysis, for instance. NAV has been in dialogue with other Scandinavian and European employment agencies and Norwegian businesses in order to find inspiration for which technologies can best help NAV’s work going forward. NAV has for instance used 180 search bots to help them identify and advertise available jobs.

“We gather data in order to give information back to other labour market players. For us it is important that big data is also smart data,” said Gunn-Elin Åsgren.

She also pointed to the fact that stricter personal data protection is an important challenge that must be solved, a view shared by her Danish and Swedish colleagues.

6.2 No fish is wasted with Icelandic technology

Written by Guðrún Helga Sigurðardóttir
Journalist, Nordic Labour Journal

Iceland’s fisheries industry has undergone a revolution in recent years. Fishing companies and tech firms have worked together to develop high tech solutions. Iceland is a global leader when it comes to developing fish processing technology. Productivity has shot up, and new computerised machinery is being exported.

Depressing, monotonous workplaces, unskilled workers in raincoats and wellies along conveyor belts wielding knives and filleting fish in a cold and wet processing hall. This has been the image of the fisheries industry so far, but it is no longer the case. At least not in Iceland.

The fisheries industry has undergone enormous change. The monotonous tasks have disappeared. Instead, high tech is being used to maximise productivity and revenues. Workers are busy carrying out quality controls. They push buttons and monitor computer screens to make sure the machines are working as they should. Workers rotate between different tasks. The workplaces are no longer so monotonous.

6.2.1 *Maximising the value of the fish*

Things started changing in the 1990s, when Iceland began automating fish processing. Icelandic fishing companies developed the theory that they could maximise productivity and the value of the fish by using every part of it – not only the filets, but also bones, skin, everything. This is how Iceland's fisheries industry operates today.

During the 1990s, pelagic fish factories froze 150 kilos of fish per worker per day. Today, the factories can freeze 1,500 kilos per person a day. The increase is due to new technology developed through cooperation between Iceland's fisheries and tech companies.

"It takes the fisheries industry only a few days to produce the same amount of fish as it takes agriculture an entire year to produce lamb meat," says Hörður Sævaldsson, Assistant Professor at the University of Akureyri.

The reason behind this development is cooperation between fish factories, fish processing plants and tech companies. The fisheries industry tested the new technology and opened the doors for inspectors who could come in and control it all. The industry for its part showed patience in cases when the technology did not work as intended. In this way, new and better technology was created, little by little.

6.2.2 *Thanking the fisheries companies*

Heiðrún Lind Marteinsdóttir, CEO of Fisheries Iceland, is grateful to the fishing companies for having taken part in the development of the new technology. She says they invested and began using the new technology before it was fully developed. They have shown great understanding and patience during the development phase.

"The development has been based on the goodwill of the fishing companies. Innovations are worthless for pioneers if they are not carried forward and tested by the companies," agrees Hörður Sævaldsson.

“The new technology sometimes reduced productivity for a period of time, damaged production and sometimes proved difficult to handle. But you have to remember that you have to invest to make a profit.”

6.2.3 *Developed through cooperation*

The development has been swift, especially over the past ten years as cooperation between fishing companies and the tech business really accelerated. Investments and increased cooperation meant the new technology developed faster than before. The aim was to increase productivity.

Heiðrún Lind points out that investments in the fisheries industry has been record high in the past three to four years. Companies have invested both in new trawlers with onboard freezing capabilities, as well as in new technology – onshore and offshore.

“Rather than importing the technology, the companies have developed machinery and technology together, which can then be exported. The new technology has become a new revenue source for the fisheries industry,” she says.

6.2.4 *Industry renewal*

Since the end of the 1990s, the equipment of Icelandic fishing companies has seen a dramatic renewal. Trawlers are fewer and bigger, and onboard technology has improved. The development has meant that Icelandic companies now work together across different trades, to be able to offer comprehensive technological solutions which can be exported as a whole.

As an example, Hörður Sævaldsson mentions a fourth generation fishery plant for pelagic fish. In 2013 the Faroe Islands purchased the first complete fishery plant for the processing of pelagic fish from Iceland. Since then, Iceland has sold fishery plants to the Faroes, Japan and Russia.

Foreign companies have also begun buying freezing houses for the processing of groundfish.

“Iceland develops and produces the computer technology and the machinery. The factory is built in the customer’s country. Iceland delivers the new technology and starts up the machines,” explains Hörður.

6.2.5 *Major increase in productivity*

Iceland's fisheries industry has been part of the development from day one. Workers used to cut fish into pieces, rinse bones and look for parasites. Fish factories have been equipped with new machines and computers, and have tested them in order to improve the technology. Today, the new technology takes care of what used to be done by hand.

X-ray cameras scan every filet and the machines rinse and cut the filets using water jets.

"For the industry, the result has been a major increase in productivity. Thanks to technology that cuts fish filets using water jets, you double productivity using the same number of staff," explains Hörður.

6.2.6 *Untouched by human hands*

Axel Pétur Ásgeirsson is responsible for marketing at the production company Curio. They make fish processing machinery that sees to it that fish are no longer touched by human hands. The entire process is automated and computerised. Axel believes the understanding and goodwill shown by Iceland's fisheries industry has made the development of the new technology possible.

"Other countries see that the best technology can be found in Iceland. We exploit the fish in the best way, we have the best raw material and we are working hard to improve further. Machines now take care of the processing, and can produce enormous amounts without growing tired. The technology has become an export," he says.

6.2.7 *Need to study*

The fisheries industry used to be reliant on a large number of workers, and it was not always easy to find people to hire. But recent developments have led to major cuts in staffing, both among fishermen and workers at the fishery plants. The machines mean improved productivity, and the number of employees is falling. Staff now need to study in order to work in the fisheries industry.

"It is always difficult to introduce changes. But we need to do it in order to develop the industry. We have to make sure employees are given other jobs," says Heiðrún Lind.

Hörður Sævaldsson believes Iceland is lucky, as there are jobs to be had in other sectors, such as tourism, construction and fish farming.

“Most people have managed to find new jobs. The fisheries industry has also put effort into training employees to work with the new technology,” says Assistant Professor Hörður Sævaldsson.

Heiðrún Lind underlines that restructuring has led to less pollution from the Icelandic fisheries industry. There are fewer trawlers and the machinery has changed. The aim is to maximise income by processing the fish from start to finish, while Iceland tries to keep its global promises on cutting pollution.

6.3 How is new technology introduced into workplaces?

Written by Marcus Floman
Journalist, Nordic Labour Journal

The conference “The Future of Work” that was held in Stockholm in mid-May 2018, heard politicians, trade unions, employers and experts discuss artificial intelligence in the future workplace. For two days there were lively discussions about how artificial intelligence soon might revolutionize every trade. Yet Juha Antila from the Central Organisation of Finnish Trade Unions, SAK, wanted to highlight one issue that he felt did not get enough attention during the conference.

“The workplace culture and to which degree you involve staff in decision-making is crucial when it comes to introducing new technology. If there is open dialogue between leadership and employees, and if the employees are allowed to take part in decisions surrounding the introduction of new technology, then the workplace will succeed. If everything is top-down, you can expect problems when you start using the new technology,” said Juha Antila.

In 2017, the Central Organisation of Finnish Trade Unions, SAK, launched a four-year-long project looking at changes to the labour market, entitled “Time of Opportunities”. Part of the project is looking at how employees in different trades view automation and AI. Antila considers the new technology to be a relatively undramatic, even neutral, factor.

“Through our surveys and conversations with employees in various trades, we see that productivity and workers’ wellbeing are closely interlinked. And when new technology is being introduced, most people consider new innovations to be positive as long as the workers themselves have been part of the debate about which technology should be adopted and especially why it is being introduced.”

There is, however, plenty of examples in Finnish workplaces where employees experience technological innovations as difficult and complicated.

"In these cases the staff have not been included in the decision-making, and there are great shortfalls in the level of support they get when starting to use the new technology. Of course you need new skills when new technology is introduced – which means employers must also make sure they train their staff."

In some trades people also have the impression that new innovations are only being used to increase the control of employees, and that the tech is mainly there to monitor the workerefficiency.

"If employees feel like guinea pigs in a trial of new technologies, you have failed."

6.3.1 *Artificial intelligence on the shop floor*

In societies with a high degree of technological innovation in the labour market, like in Finland, most trades are to a certain extent already influenced by AI and various degrees of automation. One of the reports publicised by SAK is called "AI is coming – will it change the worker's job?" Many of the workers who were interviewed said that work has become more isolated and lonely since the introduction of smart technology.

The Finnish forestry industry has automated much of the logging process, with AI-assisted control of logging machines. This means work has become more lonely, while workers face an increasing demand for skills. In this case, employers have found a good solution to the challenge by introducing day courses teaching employees how to operate the forestry machines.

AI has entered into the logistics sector too. One of the interviewees in SAK's report has the responsibility for checking that warehouse robots carry out their jobs correctly, and says the new working tasks that have been made possible because of AI have made the job more interesting, while the new technology has also given the job a higher status. Nevertheless, these warehouse workers who work with fault detection within automation have not been given suitable training in the new technology.

Postal worker Topi Saksala and home carer Niina Pahtela have also been interviewed for the SAK report. They were also interviewed for this article. Both said they wished the employer had invested more time and resources in the training of staff to prepare them for new technological solutions.

"I have been working in the postal service for 40 years, and have been part of three technological changes. The employer has provided staff training with highly varying results," says Topi Saksala.

The first time Saksala experienced the introduction of new technology was in the early 1980s, when staff training was at its worst.

"The introduction at the time was non-existent. You almost had the boss telling you to just go to your workstation and start working. After a while he wondered why I worked so slowly, to which I replied that I didn't know how to start the machine..."

When the next generation of machines were introduced, there was good cooperation to make the transition work. The staff training programme was written by the employer, the occupational safety representative and the workers' representative – on that occasion every possible aspect was considered, even the people responsible for servicing the machines were included.

Now, with the new AI machines, the introduction looked promising at first.

"People who worked with us when we started using the machines were given a good introduction and training. But those who were hired at a later stage – no, they have not received any proper training."

AI has also been introduced into the care sector in many countries, including Finland. The machines have not replaced humans in this sector either, but they have changed the way work is carried out in many occupations.

Niina Pahtela has worked for more than 12 years in the Helsinki care system as a home carer. An increasing number of older people in Finland get care at home as the number of care home spaces has fallen. Many home carers want the new, smart technology to be developed in order to help patients rather than to measure their own work input. Niina Pahtela remembers well what happened when the first smartphones entered the workplace.

"The only person on our care team to be trained in using the software was the person who distributed working tasks. The rest of us had to learn later."

After that, employees have been attending courses to learn the different programs. As the workers' representative, Pahtela has good insight into the working conditions of

home carers. Just a few months ago, when the employees were given a new version of the software, which is updated on the smartphones, many contacted her to ask why they were not immediately offered training.

“If we get no training in this, there will be less time left to assist and help the elderly people – our clients.”

Niina Pahtela also highlights the fact that technology also exists that uses artificial intelligence aimed at patients, but it is not yet possible to use.

“One example is the so-called medicine dispensing robot. It is programmed to dispense the correct amount of medication at the correct time, but if the patient is not used to a speaking robot, perhaps the medication will not be taken. The patients I have been working with, at least, need a living person to help them take their medication.”

On the other hand, an automatic combined fridge and oven robot has turned out to work well for elderly people living at home, who can get hot meals every day thanks to the robot.

“The fridge and oven robot is the only totally automated part of home care. For everything else you still need a human carer. This will change in 10 to 20 years, when many patients will be more accustomed to using technological innovations like virtual health carers – this will improve the everyday lives of patients.”

Niina Pahtela is critical to the way technology is being adapted to care for and help elderly people in poor health in their homes.

Do engineers lack imagination and knowledge?

“They do not seem to quite understand what an elderly or sick person is. You cannot, for instance, construct a care system simply using a time table. Elderly and ill people do not work like that.”

6.3.2 *Google wants to enter the Nordic labour market*

The public sector is a central player when it comes to training and offering opportunities to manage new technology. The level of state financial support for people’s education and digital retraining could determine how well a country keeps up with developments.

So what does the private sector do to make sure the labour force has up to date digital skills? The global giant Google is now about to enter the labour market in the Nordic region. The company is strengthening its position by its solid digital presence

and cooperation with local and private players, while many employees and unemployed people will get the chance to expand their digital knowledge.

Google aims to cooperate with the Nordic countries, which many researchers and statistics say are at the forefront when it comes to digital development and positive attitudes to automation.

Google's representative Iarla Flynn told the Future of Work conference in Stockholm how the company wants to reach society as a whole with its knowledge, and how it believes in shared information and openness. The company has launched a cooperation project with municipalities and authorities, including the Swedish Public Employment Services, where the company helps plan courses aimed at improving the digital skills of jobseekers.

"We bring the technological tools and our teaching materials, but the local partners are the ones who know the needs different groups have."

Flynn was clear about the fact that Google has many staff in the Nordic countries, because the Nordic region belongs to the digital vanguard.

"Many countries look to the Nordic countries and how they approach new technological developments. But there is no template for how to use new technology. All countries must make their own developments and experiments."

6.3.3 *Google also wants to work with trade unions*

Iarla Flynn from Google also told the conference that the company wants to work alongside trade unions.

"The idea to work with the trade unions is still in its infancy, but we see that the unions play an important role when we as a society want to understand how we can create the best possible labour market in the future."

Ulrika Lindstrand, President of the Swedish Association of Graduate Engineers, thinks Google's strategy of actively working with different actors in society is very interesting.

"It is very important for us to create a dialogue with the big tech companies, since what they do has a wide-ranging impact on society."

Lindstrand thinks a possible cooperation with Google could benefit the engineering union, if the members could take part in the company's training programmes.

What are the risks of a cooperation with Google?

"The greatest risk I see is that a few companies might achieve a monopoly-like position in the marketplace. And when a company gets a monopoly and access to large amounts of data, we are entering a very sensitive area. They have vast amounts of information, so it becomes very important to protect personal integrity, and people cooperating with Google must be allowed to see how the company works. We have to know who owns the data, and that all the information is being used in a way we can accept."

"I basically agree with the way Google is thinking; that they have an ambition to train people in the new technology, avoiding social gaps between those who understand the new technology and those who don't."

6.4 The second wave of digitalisation: the skills needed for older and unskilled workers

Written by Björn Lindahl
Journalist, Nordic Labour Journal

We must create jobs for both highly-skilled and unskilled people when the second wave of digitalisation empties many occupations of content, says Camilla Tepfers from the Norwegian consultancy firm InFuture.

"We are at the beginning of the second wave of digitalisation. The first was dot-com. The second wave is about machine learning. When machines can learn, they can perform tasks which we until recently believed humans alone were capable of," says Camilla Tepfers, who has looked at what will happen when digitalisation is developed further.

At the same time she says it is worth remembering that the prognoses are not always right.

"We see analyses which estimate that one in three jobs in Norway and Finland are highly likely to be taken over by technology in the next 20 years; in Sweden the number is one in two jobs. But this kind of analyses focus more on what will become technologically possible – not on whether it will actually happen."

"There is also another range of obstacles preventing this from happening. Rather than seeing lots of robots entering the workplace rendering us unemployed, a more probable scenario is that we will see new ways for humans and machines to interact. With this new interaction comes new demands, and this will affect us all, whether we have high levels of education or are unskilled, whether we are seniors or juniors," she says.

But some groups are still more exposed than others – like Millennials, people who have grown up clutching an iPhone. There is less talk about senior workers. According to Camilla Tepfers, it is important to separate the myths from the facts here.

“If we look at social media, 91% of 16 to 44-year-olds use it. Only 68% of 45 to 64-year-olds do the same. In other words, 23 percentage points fewer people in this group use social media.”

“But here we are talking about what is known as digital lifestyle skills. This is not the same as digital working skills,” she points out.

If you look at what different age groups know about using word processing programs, the difference between older and younger people falls from 23 to nine percentage points. An OECD study shows that both people aged 25–54 and people aged 55–65 have higher skill levels when it comes to word processing programs compared to under 25s.

“It is important to take a closer look at which skill needs we are facing. We must acknowledge that we need skills development in the new interaction between humans and machines, both among senior and junior workers.”

But what about unskilled people?

The Nordics are high-cost countries where it is difficult to be competitive in the international market by being the cheapest. That is why all of the countries have a skills strategy. The aim is to be best within certain areas.

“It’s a good strategy. But it must not be seen as only aiming to create jobs for highly-skilled people, or as undervaluing the work performed by unskilled workers. It is important to create jobs for unskilled people too. It is unrealistic to think everyone needs a master’s degree in order to be qualified,” underlines Camilla Tepfers.

As an example, she used the cooperation between InFuture and ISS, a Nordic facility management company that offers cleaning services, among other things.

“These services are frequency-based. ISS agrees with their customers how often they should come to clean their offices. They then do that, whether the offices are clean or dirty.”

In the ISS headquarters in Denmark more than 7,000 sensors have been installed in doors, windows, chairs, conference rooms and air conditioning systems.

“The sensors can tell you how much a conference room has been used. The cleaners have an iPad where they can see which areas have been used, across all the floors. What is marked green does not need any cleaning at all, yellow areas must be checked out, while red ones have seen a lot of use and are dirty.”

This way, ISS can better predict whether or not there is a need to clean. The cleaner can arrive at work and read the status for all of the rooms on his or her floor.

“This could give an employee more autonomy. Rather than cleaning whether or not it is needed, he or she can get a greater overall responsibility for presenting the space in the condition expected by the tenant. But this of course means you must learn new things.”

With 500,000 staff in 77 countries working in catering, cleaning and other services, ISS is a giant. The contracts the company has for cleaning services alone cover areas of 19 billion square metres.

As a result, it takes a lot to change the way people work within the company.

“ISS is an example of how we are moving from being a knowledge society, focusing on what you know, to a learning society, where focus is on what you can learn,” says Camilla Tepfers.

We can see this in the level of investment in education technology – EdTech. There has been a growth of 30% in this type of investment from 2016 to 2017 alone. In 2017 investments were worth nearly ten billion dollars.

Education has traditionally been built on formal degrees, with bachelor and master’s degrees in higher education. Formal courses have taken place outside of the workplace, where people have been put back into the classroom.

“We are now moving towards what we could call just-in-time-learning, which is an integrated part of work. It challenges the individual, the employer and those providing the training. This is where EdTech also comes in.”

“We can look at online learning platforms like Udacity, which offers nanodegrees where you earn credentials. These courses are developed in cooperation with employers. Udacity are so certain this will provide relevant skills growth that they issue a jobs guarantee for people taking their courses.”

But others beside young entrepreneurs also create new solutions. Traditional universities have started doing it too. One example is the University of Wisconsin, which offers what it calls a flexible option that to a greater degree incorporates practical work into the formal training.

You might have a 55-year-old woman who sees her job is about to disappear because many of her tasks are taken over by machines. Meanwhile, there is a different job within the company that she would not mind doing. Only she would need a formal bachelor's degree for this.

"It is a bit of a stretch to believe this 55-year-old will return to the classroom for three years and then return to the employer. What if you instead allowed her to demonstrate her knowledge acquired through a long working life, in order to have it formally accepted? And later attend courses for the rest of what is needed? You might then be able to shorten the time for this bachelor's degree from three years to one year?"

So what do you learn in the new learning society?

According to Camilla Tepfers, digitalisation will also create many new jobs. We will still need many of the trades that we have today. But the new interaction between humans and machines makes what she calls "four competencies" more important. She defines them like this:

1. Humans are still better than machines when it comes to creativity and the power to create. Sadly, that does not come naturally to humans either. NASA started studying creativity early on. They found that 98% of five-year-olds reached the score of being "very creative." Yet as we grow up, this percentage falls dramatically. At 25, only two percent of us remain very creative. The rest of the population sees it as a challenge. Newer psychology studies also show that although we say we welcome creativity and say that we like it, in reality we abhor it. The reason we abhor it is that we link it to insecurity. And insecurity is one of the worst feelings we can experience as human beings. So we need to practice our power to create. And we must practice tolerating insecurity.
2. We need to find and understand relevant information. This is a need that keeps growing because digitalisation amplifies confirmation biases, which we all have but do not want to admit to having. This is the tendency to seek and believe information we already agree with. As many as 61% of 21 to 35-year-olds and 39% of 51 to 65-year-olds get their political news through Facebook. We know that this is news which has already to a large extent been filtered, so that we completely or partially agree 80% of the time. So we need to practice information knowledge.

3. Collectively we are more knowledgeable than ever, but individually we are risking becoming more ignorant. This is partly because we have 'digital weapons of mass distraction' in our everyday lives, which means we cannot face working beyond the point of being bored. When things get boring, it is much easier to update your status or watch funny YouTube clips than carry on working. But if we do not work past the point of boredom, we will never understand the depth needed to solve the complex problems we are faced with. This is particularly important in the light of a comprehensive American research study that followed people from childhood to adulthood. It looked at the correlation between the skills the group possessed as ten-year-olds, and whether the same individuals were employed or not by the time they reached 42-years of age. Being conscientious, i.e. having what is needed to work past the point of boredom, is equally important as cognitive skills when it comes to being in employment or not as an adult. Being conscientious is the most important non-cognitive skill to have. So we need to practice our ability to immerse ourselves.
4. Social skills are important going forward, for two reasons. Firstly, we see that jobs involving people – be it in health or education – are the kind of jobs that are growing in demand. And secondly, in the new interaction between humans and machines, tasks involving people in nearly any job become more important. So we need to practice our social skills.

Camilla Tefers ended her presentation by summing up her message in two sentences:

"We stand at the threshold of the second wave of digitalisation, which means new interactions between humans and machines rather than machines taking over our jobs."

"For this interaction we need both senior and junior workers to expand their skillsets, because we must create jobs for both highly-skilled and unskilled people."

6.5 We need an informed debate about digitalisation”

Written by Gunhild Wallin
Journalist, Nordic Labour Journal

“80 year-olds are considerably more diverse than 40 year-olds, yet older people are still treated as a homogenous group with no particular technological skills. This limits innovation and influences the shaping of welfare technology for older people,” says Britt Östlund, a professor specialising in older people and welfare technology at the KTH Royal Institute of Technology.

Britt Östlund, with her talk “Why the users’ perspective is part of the problem” was the closing keynote speakers at the conference “The Future of Work in the Nordic countries – the impact of technological development on work and skills. The talk was originally called “Focus on the users’ perspective” but she had it changed. In a conversation before the conference she was also a bit disappointed that the focus on the users of technology was at the end of the programme.

“It is typical that the users’ perspective of new technology ends up in last place,” she stated.

Britt Östlund, who is a professor technology in health care at the KTH Royal Institute of Technology and Health, is totally opposed to the word *user* when it comes to the application of welfare technology. It has completely the wrong connotations and is a provocative term, she believes.

“A user plays a passive role, simply receiving welfare services which we provide. I think it is a derogatory term, signalling low expectations. We should be asking ‘what can we help you with?’ I think operators or citizens is better and more respectful.”

The common thread in her work is the question – what does it mean to get old in the time of digitalisation? And what should be the role of new technology in the home? For her, the implementation of the technology is key.

One of the problems with that implementation is how society views older people.

"We have low expectations of older people and antiquated views of them as users of technology. But we all live in a technological landscape, and these days many older people move into their nursing homes carrying a laptop. They also carry completely different expectations with them, compared to previous generations," says Britt Östlund.

Certain physical functions do deteriorate with age, for instance eyesight and hearing, but at the same time, people's capacity for experience-based learning increases.

"There is great potential here," she says.

6.5.1 *We become more diverse with age*

She also objects to the view of older people as a homogenous group.

"Precisely the opposite is true. Differences between individual people increase with age, and we become more different with individual needs and preferences."

Britt Östlund has carried out research on technological development, older people and design for 40 years. Welfare technology started developing towards the end of the 1980s, spurred on by more liberal tendering rules for municipalities, which meant they were given more autonomy to purchase welfare technology. The aims were often unclear and were often based on the argument that it would help older people stay in their homes for longer, says Britt Östlund.

"I became interested in safety alarms and applied for a course in technology and social change at the University of Linköping."

To illustrate how little input the users have had in the development of safety alarms, she shows two pictures. One is of a 1970s safety alarm, the other is of a modern one. Nothing has happened, they are identical.

"It is ugly and oozes fragility and low expectations."

6.5.2 *A necessary dialogue*

In 1995 she gained her PhD with her thesis 'The old are the oldest. A study of the importance of technology in older people's lives.' Since then she has focused on technology in home care, but also on older people as operators, consumers and citizens. From the beginning she was told that technology had nothing to do with older people.

"The world of research was divided into silos of technology and operators. This is still the case, but to a lesser extent. There is a growing interest in involving older people in the design process, and to use their needs as a starting point," she says.

To her this is a crucial factor if welfare technology is actually going to work. It is not enough to sit in a lab and invent technology aimed at making everyday life easier for older people, or to protect them. In order for welfare technology to be useful, it must stand the test of implementation in people's homes 'out in the wild' as she puts it. The technology must be tamed and adapted to the situation and the person in order to be useful. A technological aid might work in a hospital, for instance an oxygen cylinder, but it does not fit in a home.

"If you look at the development of robots, for instance, we perhaps think that older people want company from a cute robot, or that they need technology that can monitor them in case they should fall over. But that is just following our own prejudices. Older people might want other things, and might be particular about having a nice home without ugly technology lying around. I am constantly surprised."

Some innovations pass the test, others not, but failing technology can lead to new insight too. The bread-making machine was a short success, but inspired a development that has seen almost every grocery shop now selling bread baked in store.

6.5.3 *Speak to them, not about them*

Britt Östlund's talk showed us a person who is deeply engaged in her topic. After studying older people's use of technology for decades, she has strong opinions on both the shortfalls and opportunities of welfare technology and its use. When she talks about stereotypical descriptions of older and ageing people, it is with an edge to her voice – but also when she talks about the perception that new technology will be the saviour of future home and elderly care.

Britt Östlund sees home care as the cornerstone of a well-functioning society. That is why it is so important to gather knowledge about the working environment and how technology can be used to benefit both the elderly and those who work in the care sector. It is often said that new technology will save both time and money in care, but research does not support this.

"Technology can make the work easier and more flexible, however," she states.

Right now, Britt Östlund and her colleagues are involved in a research project together with the University of Lund and five municipalities. The researchers are looking at the working environment in the home care sector, and ask 'What would be interesting to you?' They also look at how the introduction of new technology in home

care can influence the working environment and leadership. As part of their work, they have been investigating how many science articles have been written about the working environment in the home care sector, where so much new technology will be introduced and used. The researchers found only 16 articles, despite a world-wide search. The knowledge of elderly care is fragmented.

“We talk about those who work there, but they are not part of the conversation themselves,” says Britt Östlund.

6.5.4 *National support for purchasing welfare technology*

What has been uncovered is that employees have high accident and injury rates and that sick leave figures are high. The sector is also nearly completely dominated by women – what does that mean? There is also a belief that this is an occupation where you do not need a lot of knowledge.

“We also know that they have dealt with new technology every day over many years, and that they are hugely experienced in the use of technology. Now they get a chance to tell us what they know.”

Britt Östlund first and foremost wants to improve the working environment in elderly care. If you want innovation and welfare technology to work, the working conditions must be improved and you need to make use of employees’ technological knowhow. But the municipalities must also stop buying ‘gadgets’ without any thought or strategy behind this. She is also very aware that it is difficult to get to grips with everything that is happening in this area, and wants to see national support for the municipalities.

Britt Östlund’s starting point is that technology is created by people, and so it is possible to influence how it is made. That is why she wants a debate about who is in charge of the technology and she wants a dialogue about digitalisation. How is responsibility shared? What about the ethics?

“The basic idea around the world is that technology is magic, and we have two choices – adapting to it or protecting ourselves from it – and people with low education levels or the users come last. Digitalisation means we have to think in new ways. We must not be blinded by the new technology but be critical of it in order to gain an informed view of technology. When it comes to technology aimed at older people, it is we – researchers and politicians – who perhaps need to learn new things, not the elderly. It is more important to talk to, and not about, people.”

7. Will the Nordic model prevail?

Juris honorary doctor Kerstin Ahlberg in her article “Challenges for Labour Law, Social Security and Industrial Relations” presents a broad view of how the conference discussed these issues. She also raises the question “Will the Nordic model prevail?”

Written by Kerstin Ahlberg
Juris honorary doctor, Stockholm University

Does the Uber driver have an employer? Is the “self-employed” actually an employee? And what will the zero hours worker live on if he or she does not get to work enough hours? The questions are not new, but they become increasingly important as digitalisation accelerates and new forms of work relations become ever more common. The future of work will call for innovation also when it comes to legislation and social protection, underlined Sweden’s Minister for Employment and Integration, Ylva Johansson, when she opened the conference on the Future of Work in the Nordic Countries.

7.1 Non-standard work is increasing

It is a fact that employment forms other than open-ended full-time contracts have become increasingly frequent. In its proposal for a directive on “Transparent and predictable working conditions in the European Union” the European Commission points to the fact that, in 2016, a quarter of all employment contracts were for ‘atypical’ or “non-standard” forms of employment and that these have accounted for more than half of the new jobs that emerged in the past decade.⁸

⁸ COM (2017) 797 final, Brussels 21.12.2017, p. 1.

For example, relying on Eurostat's Labour Force Surveys, Spasova *et al.* note that the share of part-time work increased from 17.5% to 19.6% between 2007 and 2015. In four of the Nordic countries, Denmark, Iceland, Norway and Sweden, the proportion of part-time work was even higher than that; more than a fifth of people in employment worked part-time.⁹ Similarly, during the same period, the share of temporary jobs increased in 23 out of 33 countries covered by the study.¹⁰

In addition to different types of salaried employment, Mark Keese, Head of the Skills and Employability Division at the OECD Directorate for Employment, Labour and Social Affairs pointed out that another category that has increased is "dependent self-employed workers".

There is no uniform definition of the concept "dependent self-employment"; here it suffices to note that a dependent self-employed worker formally works under a contract for services, i.e. a commercial contract, not an employment contract, but under working conditions similar to that of a salaried worker. For example, he or she works for one business only, cannot engage another worker to perform the task and receives direct guidelines from the client for how the work should be done.¹¹ Thus, some of the criteria for genuine, independent self-employment are missing, and in practice, the work relation is something between self-employment and dependent, salaried employment.

Because there are no clear boundaries between "dependent" and "genuine" self-employment, there is little good data on the incidence of dependent self-employment. Some information can be found in the European Survey on Working Conditions, where the survey can actually identify what they call dependent self-employed, Mark Keese told the conference. As a share of total employment, this work form is still comparably small in the Nordic countries (between 1 and 5%). However, it increased from 2010 to 2015, with an especially strong rise in Sweden. When you look at dependent self-employment as a share of total self-employment, calculations by Williams and Lapeyre indicate that, in Finland, this accounted for as much as 29%

⁹ Slavina Spasova, Denis Bouget, Dalila Ghailani & Bart Vanhercke, Access to social protection for people working on non-standard contracts and as self-employed in Europe, A study of national policies, European Commission 2017, p. 23.

¹⁰ Spasova *et. al.* p. 24.

¹¹ According to the ILO, dependent self-employment should be distinguished from 'bogus' self-employment, where employers treat workers as independent contractors while they are in fact employees, Spasova *et. al.* p. 29.

in 2015. The corresponding figures for Denmark and Sweden were 11% and 12%, respectively.¹²

From the point of view of enterprise, the point of engaging a self-employed person rather than employing a worker is that there is no need to worry about the duties that come with being an employer. Labour law is not applicable to the self-employed; they have no employment protection and are not covered by working hours or working environment regulations, to mention but a few examples. Neither are they covered by minimum wage legislation or collective agreements, which means that their pay is dependent on their individual competitiveness on the labour market. In legal terms, they are undertakings, not workers, with the consequence that competition law applies, and restricts their possibilities to agree on a joint tariff for their services. Lastly, to the extent that they are covered by statutory social security schemes, the self-employed will have to pay their own contributions. Given all this, it is not surprising that those commissioning work prefer to classify those who will be carrying out the work as self-employed, and that platform companies persistently try to deny that they are employers.

In most legal systems today labour law does not acknowledge a third category between self-employment and salaried employment. For the purpose of deciding whether a work relation is governed by labour law or commercial law, the worker must be categorised into either one of the two legal categories. This means that persons in dependent self-employment may be seen as employees and enjoy the protection of labour law. However, the assessment of their labour market status will be made on a case by case basis.

A third tendency, mentioned by Minister Ylva Johansson, is the increasing number of people who multitask. They might be hired by more than one employer, or combine salaried employment with running their own business or add to their income via digital platforms such as Uber, Foodora and Hilfr.

¹² Colin Williams and Frédéric Lapeyre, *Dependent self-employment: Trends challenges and policy responses in the EU*, Employment Working Paper No 228, International Labour Office, 2017, p. 18.

7.2 The tendencies are set to continue

These tendencies look set to continue.

The platform economy is expected to contribute to a continuing increase in the number of self-employed people and temporary work. In addition, several countries have introduced specific measures to encourage entrepreneurship and self-employment, partly as a means to facilitate transition from unemployment to gainful employment.¹³

Digital technology also drives the development towards on-demand work/zero hours contracts and short fixed-term contracts among ordinary employers, Samuel Engblom, Policy Director at the Swedish Confederation of Professional Employees TCO, told the conference. Digital technology has enabled employers in commerce, the hotel and restaurants sector and home care service to calculate when, during the week/24 hour period/day, the demand for services will peak, and then, by sending an SMS, call in the exact number of people that the employer needs at any one time at very short notice.

7.3 Policy objectives for labour law reform

However, on the whole, labour law is still based on a model of full time salaried employment. According to Mark Keese, four policy objectives are particularly important in order to adapt labour law to the new world of work, so that it balances flexibility with security:

- Thinking of the platform economy and the rise of “gig” workers you have to provide better guidance on how to classify workers. Who is *truly* a self-employed worker and who is *truly* an employee?
- There should also be a better balance in the burden of proof between worker and employer when determining whether someone is an employee or not. Now, the burden rests primarily on the worker;

¹³ Spasova et. al. p. 30 et seq.

- Incentives to take up new types of work should be reduced by making the regulations neutral across different forms of work. As a warning example, Mark Keese mentioned the Netherlands, where there are large differences in social security contributions between salaried workers and self-employed workers. This is a strong incentive to change the status from employee to self-employed and has led to a huge increase in self-employment, largely independent of the platform economy;
- You have to ensure fair pay and working conditions. This would not necessarily mean that you have to invent new rules; old rules may work well. For example, many countries' minimum wage regulations already include pay for piecework and these rules might be applied to "gig" work, as this is a type of piece work. In the Nordic countries that do not have mandatory minimum wages, the social partners could include requirements for piecework in collective agreements and ensure that it is adequately rewarded, Mark Keese suggested.

7.4 Insufficient social security protection

Like labour law, social security schemes have to be adapted to the new realities. In general, they primarily meet the needs of salaried employees, and particularly those with open-ended full-time contracts. They are less fit to afford adequate protection to workers in non-standard employment and, even less, to the self-employed (neither genuine nor dependent). The problem is twofold; some categories are completely excluded from parts of statutory social security, while others are formally covered but have difficulties in fulfilling the criteria that would allow them to benefit from the insurance.

The self-employed belong to the first category. In many countries, they are excluded from parts of the statutory social security, most typically insurance in case of occupational injury and unemployment. Here, the Nordic countries do comparably well; self-employed persons are covered by most types of statutory benefits, and their right to unemployment benefits is partly recognised (except in Norway). However, they are not covered by the mandatory insurance against accidents at work in Norway or Denmark, although in Denmark, there is a possibility to opt-in for such protection.

In cases where the self-employed are in fact covered, they have one problem in common with employees in non-standard employment. Both groups often have difficulties in fulfilling the conditions for receiving benefits from the insurance. They are

formally – but not effectively – covered. In order to be eligible for benefits, they may have to pass certain thresholds with respect to the contributions period, hours worked or even income. For example, benefits are dependent on the period in employment, which means that temporary workers may not have worked long enough, part-time workers may be excluded from benefits because they have worked too few hours, the income base for calculation of benefits does not reflect their actual income loss etc.¹⁴

The fact that larger parts of the workforce do not have sufficient access to social protection due to their labour market status or the type of employment relationship has also attracted the attention of the European Commission. In March 2018, it was proposed that the Council of Ministers should adopt a recommendation on how member states should modernise their schemes for social protection, in order to offer “an adequate level” of protection for all individuals in employment or self-employment.¹⁵ This means, according to the proposal, that protection should be provided, sufficient and timely to uphold the standard of living, to provide adequate income replacement and to prevent the insured from falling into poverty.

According to the Commission, rights and entitlement to benefits should also be transferable between different social security schemes, for example, when people go from salaried employment to self-employment or unemployment or when they combine salaried employment with self-employment.

Ylva Johansson touched upon the same subject: Social protection and labour law have to keep up with the tendency of increased multitasking and recognise this development. As Mark Keese put it,

“We need a shift from social protection based on male, full-time breadwinners getting their social protection through their jobs and through the contributions made by their employer. Social protection should be made less dependent on the job that you are actually in. That can actually facilitate mobility between jobs, or when you are not in a job but do other things, for example engage in training,” Mark Keese concluded.

¹⁴ Spasova et al, p. 51 et seq.

¹⁵ Proposal for a Council recommendation on access to social protection for workers and the self-employed, COM(2018) 132 final, 13.3.2018. The branches of social protection that should be reviewed are unemployment benefits, sickness and health care benefits, maternity and paternity benefits, invalidity benefits, old-age benefits and benefits in respect of accidents at work and occupational diseases.

7.5 Will the Nordic model prevail?

One question that indirectly relates both to labour law and social security is whether the Nordic model as we know it will prevail. Several speakers at the conference underlined that the Nordic countries are exceptional with their very strong reliance on collective agreements as instruments for regulation of the labour market. This tradition rests on incomparably high rates of unionisation, but trade union density is decreasing. Will the trade unions be able to attract non-standard workers? Will it be possible to integrate platform companies in the industrial relations system? Will there be a shift in the centre of gravity between collective agreements and legislation?

A decisive issue in this context is how platform workers are classified; are they employed by the platform companies (or by the receiver of the services) or are they self-employed? If they are seen as self-employed, it may be difficult for trade unions to defend their interests through the traditional trade union methods, because in some cases it would be contrary to competition law. Thus, to make it possible to integrate the platform economy in the industrial relations system, governments may even have to rethink competition law to some extent.

7.6 The first collective agreement with platform companies

In any case, in 2018 the Nordic model is still alive and kicking. In April 2018, the cleaning platform Hilfr entered into a collective agreement with the Danish trade union 3F, reported Jens Erik Ohrt, international advisor to the Danish Confederation of Trade Unions.

The agreement is the first in its kind to cover a platform company. As part of the agreement, Hilfr takes on employer responsibilities, and cleaners become employees after 100 hours of work via the platform – unless they themselves choose to continue as “freelancers”. They will be paid at least DKK 141.21 (EUR 19) an hour, and have the right to sick pay, holiday pay and a pension. The agreement also includes rules for how long a period of notice Hilfr or the cleaner has to give in case they want to end the employment.

The collective agreement has been praised as proof that the Danish labour market model will also work in the future. However, it has also faced criticism from representatives of the agency work business, who argue that it goes against both the

law and the Danish model, leaving the cleaners in a judicial no man's land. According to labour legislation you cannot decide for yourself whether you should be treated as an employee or as being freelance – if you fulfil certain criteria you are an employee, whether you want to be or not.

3F stresses that the collective agreement for now remains a pilot agreement running from 1 August 2018, and that it will be evaluated by the social partners after twelve months.

There are other signs that platform companies are slowly beginning to face up to the demands that they be responsible for the working conditions within their businesses. Uber's spokesperson in Denmark, Kristian Agerbo, has announced that Uber, which has been absent from the Danish market for one year, wants to "regain Denmark's trust".

"We have acknowledged that in order to return, we also need to take a new approach to our activities and find solutions to the questions surrounding taxes and working conditions for the drivers who use our services," Agerbo wrote to the Danish web magazine Altinget on 17 May 2018.

Obviously, this is not the same as admitting that Uber is the drivers' employer.

7.7 Solutions are still to be found

The conference shed light on some of the challenges that labour law, social security schemes and industrial relations in the Nordic countries will be exposed to in the new world of work. However, the solutions are still to be found.

Some who look for such solutions are 30 researchers at the Fafo Institute for Labour and Social Research in Norway in the research project *The Future of Work: Opportunities and Challenges for the Nordic Model*. In 2020, they hope to be able to present ideas for how legislation can be developed and reformed and how to revitalise the Nordic model's ability to reconcile growth, efficiency and equity in working life.

They have a huge mission before them.

7.7.1 *References*

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Sammanfattning

Konferensen om framtidens arbete är en del av det initiativ som lanserades av Internationella arbetsorganisationens (ILO) generaldirektör Guy Ryder 2015, för att förbereda för firandet av ILO:s hundraårsjubileum. Syftet är att ge ett nordiskt bidrag till diskussionen om framtidens arbete för att bättre kunna möta de framtida utmaningarna. Den ingår i en serie av nordiska konferenser fram till jubileumsåret 2019.

Den 15–16 maj 2018 arrangerade det svenska ordförandeskapet i Nordiska ministerrådet en konferens om "Utformning av arbetets framtid i Norden – Inverkan av teknisk utveckling på arbete och kompetens". Konferensen bidrog till ett pågående nordiskt projekt där liknande konferenser med inriktning på arbetets framtid har hållits i Helsingfors (2016) och Oslo (2017). Island anordnade en avslutande konferens i april 2019.

Tyngdpunkten på konferensen i Stockholm låg på hur teknologisk utveckling i form av digitalisering, robotisering och automatisering påverkar framtidens arbetsliv och vilka konsekvenser detta kommer att få på behovet av kompetens och livslångt lärande. Teknologiska och demografiska förändringar, klimatförändringen liksom globaliseringen förändrar arbetslivet. Men framtiden är inte förutbestämd av tekniska eller socioekonomiska megatrender utan är påverkbar. Robotar och artificiell intelligens (AI) kan skapa tillväxt i Norden utan att skapa ökad arbetslöshet, och under rätt förutsättningar kan Norden bli en digital frontrunner.

Konferensen pekade på några av medlen för att möta teknikutvecklingen. Livslångt lärande där deltagarna pekade på att det behövs förändringar i utbildningssystem för både ungdomar, yrkesverksamma och äldre personer. Behovet av en förbättrad könsbalans genom att få fler flickor och kvinnor in på utbildningar och yrken som efterfrågas inom STEM (Science, Technology, Engineering and Mathematics) lyftes även fram. Det gavs exempel på hur privata företag och offentligt sektor arbetar för att bemästra ny teknologi för bättre konkurrenskraft och välfärd. Samtidigt pekades deltagarna på risken av att en lägre facklig organisationsgrad påverkar den nordiska modellen negativt, att det finns risker för jobb- och utbildningspolarisering när människor ska ställa om samt att socialförsäkringarna utsätts för prövningar om sysselsättningsgraden minskar. Flera pekade på att de

nordiska länderna lyckats hantera många stora tekniska förändringar med hjälp av samarbete och social dialog mellan olika aktörer. Det innebär att förändringar välkomnas kan omfamnas snabbt, om människor kan se långsiktiga fördelar med utvecklingen.



Nordic Council of Ministers
Nordens Hus
Ved Stranden 18
DK-1061 Copenhagen K
www.norden.org

Nordic Future of Work Conference

In the runup to the ILO's 100th anniversary in 2019, the ILO asked the Nordic countries to contribute to the debate about how the future of work can be shaped. the Stockholm conference gathered more than 120 participants, and was number three out of four annual Nordic conferences.

The debate was divided into four main themes:

- 1) How will the technological developments affect the Labour market?
- 2) How are the Nordic countries preparing for a more digitised and automated labour market?
- 3) How are companies and industries affected by the technological development?
- 4) How to deal with the need for skills?

The programme included perspectives from all of the Nordic countries, from multinational organisations such as the OECD and the ILO, international companies such as McKinsey and Google, Nordic labour market authorities, social partners and companies undergoing changes.



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