


# Sweden: Mismatch priority occupations

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## Summary

*Engineering professionals belong to high shortage occupations for Sweden.*

Looking at past, current and future trends (3-4 years), a number of occupations have been identified as **mismatch priority occupations for Sweden**, i.e. they are either in shortage or surplus. **Shortage occupation**: an occupation that is in short supply of workers, and for which the employers typically face difficulties finding a suitable candidate. **Surplus occupation**: an occupation for which there are plenty of suitable workers available but low demand. The employers have no problems filling such posts.

The list below is based on an assessment of the labour market of **Sweden**. The occupations presented are not given any rank. All of them present high mismatch.

## Mismatch priority occupations

# Sweden



### Shortage occupations

Engineering professionals

Healthcare professionals

ICT professionals

Education professionals

Mining

### Surplus occupations

Humanities and arts professionals

Social sciences, law, trade and administration professionals

Journalists, human resource specialists, social scientists, administration officers

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## Shortage Occupations

### Engineering professionals <sup>[1]</sup>

Based on analyses conducted by the Swedish PES, key shortage occupations related to the profession of engineering have been identified: engineers - building and construction, building services / technical building; engineers – chemical, electrical power, heating, plumbing and ventilation, mechanical, mining engineers, metallurgists and related professions. <sup>[2]</sup> In addition, the PES indicates the following occupations as shortage professions: Engineer, Master of engineering, electronics-telecommunication, Electrical engineer and Electrical technician, Electronics engineer and Electronics technician.

Statistics Sweden forecasts to 2035 indicate a significant **decrease in the supply** of upper secondary engineers and of those educated in industrial subjects. For both these groups, although the demand is expected to decrease during the forecast period, an even more dramatic fall in supply is expected. <sup>[3]</sup> Shortages occur due to a **lack of technical competencies** which explains the **high demand** for

experienced employees. Bottleneck vacancies appear in high-skilled occupations, such as specific types of engineers and various occupations related to information technology. The Swedish PES predicts there will be even more labour shortages in five to ten years due to **increased retirements**.

Since 2011, the government and social partners have discussed measures to facilitate young people's transition from school to working life and to safeguard long-term skills supply for companies.<sup>[4]</sup> An example of a specific measure to increase the supply of service technicians is to support the company's relationships with schools. Stockholm's High School for Transport and Automotive Technology (Stockholms Transport och Fordonstekniska Gymnasium, STFG) is one of the schools trying to cooperate with the company Scania.<sup>[5]</sup> Refernet (2012) mentions many initiatives at the regional level, that are not state-regulated, to foster cooperation between schools and employers. For instance, actors on the labour market have initiated *Teknikcollege* (Technical college) and *Vård- och omsorgscollege* (Health and Medical care college), a form of cooperation within the framework of upper secondary and tertiary education. Behind the *Teknikcollege* is the *Industrial Council* (*Industrirådet*) and different employer and employee organisations in technology and industrial sectors. The *Teknikcollege* wishes to be a long-term provider of competence, and also actively works to promote quality in vocational education at upper secondary and post upper secondary levels<sup>[6]</sup>.

## Healthcare professionals<sup>[7]</sup>

The list of the Swedish PES identifies shortages for the following occupations within the Healthcare and medical sciences<sup>[8]</sup>: dental assistants, dental hygienists, dentists, doctors, life science technicians, medical secretaries, midwives, nurses, pharmaceutical assistants/technicians, pharmacists, psychologists. In addition, the PES also indicates shortages for the following occupations: assistant nurses and nurses (with basic training; in emergency care, geriatrics, operating room, paediatrics, psychiatric care, and in public health and X-ray). Within the healthcare sector there is a **lack of an experienced and qualified workforce**. In particular, medical specialist competencies are hard to find for the employers. However, Statistics Sweden's Trends and Forecasts 2014 mentions that the most critical shortage of educated labour is to be found within the healthcare sector at upper secondary school level (e.g. health care assistants/nurses), where the labour shortage is expected to be approx. 160 thousand<sup>[9]</sup> in 2035.<sup>[10]</sup> The demand for educated health care workers is on the rise because of the **ageing society** (more people in need of care), and the supply of qualified workers is expected to decrease somewhat because of the **low interest** in the Health and Social Care Programme. There is **high demand for specialist doctors**, (specialist) nurses and, since 2013, also generalist nurses.<sup>[11]</sup> In 2013 there were nearly 379 thousand people working as nurses, healthcare assistants, care assistants, personal assistant, nurses, carers 'or' other health-care personnel. Further growth in demand is expected to continue in the future, especially in relation to workers taking care of the **elderly**.<sup>[12]</sup>

One general policy approach of the Swedish government is to attract qualified and highly qualified migrants. Employers play an active role in recruitment of third-country nationals. It is up to them, for example, to identify whether they can find suitable workers within Sweden, and if not, whether they wish to recruit a worker from a third-country. Survey data from Eurostat shows that this is an effective measure in general to attract health professionals. Statistics shows that the number of third-country nationals has risen from 13 thousand in 2008 to almost 22 thousand in 2012. <sup>[13]</sup> In the healthcare

sector employers' organisations are working together with educational institutions to increase the number of students in relevant educational programmes as well as the number of places in these programmes. In recent years the number of students attending courses in the health care sector has increased (no exact figures available). There are many initiatives, not regulated by the State, for cooperation at regional level between school and working life. For instance, actors in the labour market have initiated *Teknikcollege* (Technical college) and *Vård- och omsorgscollege* (Health and Medical care college), a form of cooperation within the framework of upper secondary and tertiary education. <sup>[14]</sup> Municipalities and county councils in Sweden (SKL) together with the trade union, the Swedish Municipal Workers' Union (Kommunal) and the Association of Private Care Providers (Vårdföretagarna), started a similar initiative in a college for health and medical care with a strong focus on ensuring access to competence and competence development of existing staff, and also increasing quality in work-based learning for youth and adults. <sup>[15]</sup>

## ICT professionals <sup>[16]</sup>

The labour shortage list of the Swedish PES includes several occupations within the ICT sector: GIS (Geographic Information Systems) drafters; ICT architects; ICT testers; test analysts; Software / systems engineers / developers <sup>[17]</sup>. A large presence of multi-national ICT firms, start-up technology companies, research and development institutions, and numerous technology parks contributed to a **very high demand for qualified ICT professionals** throughout Sweden. The main stakeholders in the field of e-skills <sup>[18]</sup> in Sweden are aware of the strong demand for ICT practitioners with appropriate skills to meet rapidly evolving employer needs. According to national estimates, the continuing strong demand for professional e-skills has led to a shortage of about 30 thousand ICT practitioners in 2012. <sup>[19]</sup> As regards the specific skills needed, the ability to adapt, and contribute, to customer-driven processes becomes increasingly critical. As customers and users become increasingly ICT mature in countries like Sweden, greater demands are being placed on products and systems, leading to **more skills needs** on the part of ICT practitioners. This progress is expected to continue to grow in relation to the rest of the economy, leading to the risk of widening skills shortages in the ICT sector. Within ICT occupations, the lack of skilled workforce is due to **undersupply of graduates** in the field, as well as a **demand for experienced recruits**. <sup>[20]</sup> According to the forecast for 2035 by Statistics Sweden, there is a risk of a shortage of post-secondary ICT-educated persons. The supply of ICT-educated persons is expected to increase dramatically during the forecast period (especially the supply from vocational higher education programmes). However, the demand is expected to grow even more, which may lead to a growing deficit of ICT-educated persons in 2035. <sup>[21]</sup>

In recent years, Sweden showed strong commitment to efforts for assessing supply and demand dynamics related to ICT practitioners, and for developing adequate policies to safeguard sufficient supply of the right types of professional e-skills in the future. An eSkills Council was set up and the issue is included as one of the key challenges in both the Digital Agenda for Sweden and the Swedish Innovation Strategy <sup>[22]</sup>. The Council is a forum for agreeing and developing joint activities for meeting business and public sector long-term e-skills needs. It researches and disseminates information about current and future e-skills, prepares proposals regarding the interface between industry and the education sector, and acts as a referral body for policy proposals from the government or other bodies. In ICT, employers'

organisations are working together with educational institutions to increase the attractiveness of ICT among youth and the number of students in relevant educational programmes as well as the number of places in these programmes. <sup>[23]</sup> For example, ICT & Telecom Companies industry organization came up with an initiative called VälJIT <sup>[24]</sup> ("Choose ICT"), which aims to get more young people from high schools to study and work in the ICT sector. The initiative was launched in 2009, and re-launched in 2011 and 2014 after a successful first phase. Various efforts have been made to a) encourage young people to try out programming and b) influence the government to include programming and digital content creation in the school timetable. Examples of this are the training group AcadeMedia initiative "Future Language". The Swedish Association of ICT & Telecom Industries maps shortages of specific professional roles through surveys. The first survey was carried out in 2012 and updated in 2014.

## Education professionals <sup>[25]</sup>

The labour shortage list <sup>[26]</sup> published by the Swedish Institute shows shortages in all education areas: <sup>[27]</sup> pre-school teachers, primary education teaching professionals, recreation instructors for school children, special education teachers, teachers in aesthetic and practical subjects, and teaching professionals of general and vocational fields in upper secondary level.

According to the forecast for 2035 of Statistics Sweden, within the area of education and teacher training, **demand is expected to increase** for all teacher categories included in the forecast. This can be explained by the rise in the number of compulsory and upper secondary school students during the forecast period. As the **supply** of qualified teachers is not expected to be sufficient to meet the demand there is a risk of a shortage within all teacher categories. In relative terms, the shortage is expected to be greatest for qualified vocational teachers, special needs teachers and recreation instructors, where the demand is estimated to exceed supply by over 30%. <sup>[28]</sup> The teaching workforce in Sweden is also **ageing**. Research shows that in Sweden 49% of teachers in upper secondary education is aged over 50 <sup>[29]</sup>. The Employment Service's research department forecasts that in the period up to 2025, between 36 and 66% of Sweden's teaching professionals will retire. <sup>[30]</sup> According to the PES, the lack of teachers is geographically widespread and affects almost all categories of teachers that the Employment Service maps. The Local and Regional Government Authorities, SKL (Sveriges Kommuner och Landsting) however, identified regional differences and categories of teachers facing a more pressing shortage e.g. it is calculated that from 2010 up to 2019 there will be a need for 109 thousand new teachers. The demand is highest for pre-school teachers and upper secondary teachers in subjects such as mathematics and engineering. <sup>[31]</sup> For pre-primary school teachers the recruitment difficulties relate to a **new regulation** requiring all pre-primary teachers to hold a relevant degree. The current workforce does not meet these requirements, which leads to a very favourable labour market for pre-primary school teachers. <sup>[32]</sup>

In 2011 the government supported financial investments to establish proper career paths for teachers; this was expanded in 2012-2015. <sup>[33]</sup> The increased funding addresses the impact of comparatively low salaries for teachers in Sweden, set by local rather than national government. Swedish teachers are currently poorly paid compared with other professions. The wage difference between teachers recently graduated and those with 15 years of experience or more is also very low. As a result, the profession is no longer attracting the brightest graduates and many of the best teachers are leaving. In addition,

quality-improvement policies were established. As of the 1<sup>st</sup> of December 2013, professional certification is required for school and pre-school teachers on permanent contracts. This policy aims to raise the status of the teaching profession, support professional development and increase quality in education. <sup>[34]</sup> Despite the financial investments, education providers encounter challenges in recruitment. According to the Teachers' Association there are three main problems <sup>[35]</sup> that play a role. The first is the perceived closure of the teaching sector. Due to traditional racial discrimination in the Swedish job market, ethnic minorities are not encouraged to take careers in teaching. They are disqualified just by their appearance (e.g. skin colour). Also younger non-whites are not encouraged to take courses that could lead them to careers in teaching; therefore, the number of non-white Swedes in teaching is minimal. The second problem relates to the inability to recruit teachers from abroad. With teaching carried out in Swedish, language barrier means that they must rely only on home-grown teachers. Lastly, salaries for teachers in Sweden are not competitive enough <sup>[36]</sup> which means that the teaching professions are less attractive and it may encourage teachers to leave the sector.

## Mining <sup>[37]</sup>

Mining is a specific sector in Sweden experiencing bottleneck problems. Although it is a relatively small sector in terms of employment, the growth is strong and it generates economic activity in less developed regions. The mining industry has a **large and important role** in the local labour market especially in the northern parts of Sweden. High demand in the mining industry generates high demand in a variety of other ancillary industries. There is an increasing need for skilled labour e.g. to find workers with tertiary education who can lead and manage the work in the mines remains a problem. Likewise, there is a problem to find enough miners with mechanical-electrical and geological **expertise**. A survey among mining operators in the mining industry reported that in 2014 six out of ten companies had experienced **labour shortages** in the past six months. Shortages existed not only because of the need for more technical skilled workers, but also because skilled workers started working in neighbouring countries (expanding their mining activities and offering competitive labour conditions). Another reason for shortages is the **ageing workforce**. <sup>[38]</sup> Shortages are exacerbated by the fact that few applicants are willing to move to the regions where the work is. In certain mining communities the number of inhabitants is decreasing due to a high number of commuters working in mining companies located elsewhere. This has an impact not only on the mining business, but also on other sectors (e.g. services and care) which receive less revenue and a reduced tax base. <sup>[39]</sup> However, the PES indicates that there is no longer a shortage of workers in the mining sector. One of the measures to fulfil the shortages was to allow third-country migrants to fulfil the existing vacancies via a work permit (Mining engineers, metallurgists and related professions are included in the labour shortage list of the Swedish PES).

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## Surplus Occupations

Surpluses have been identified for a number of occupations. The forecast for 2035 (Statistics Sweden) indicates a growing surplus of workforce with education in the humanities and the arts. Given existing humanities and arts programmes, the **number of graduates** in these areas will **exceed** the expected number of persons retiring during the forecast period. A relatively large number of **migrants** with these

skills coming into Sweden will also contribute to oversupply. <sup>[40]</sup> In addition, at the end of the forecast period (2035), there is a risk of a surplus of post-secondary educated persons within most of the educational groups in the area of social sciences, law, trade and administration. The surplus is expected to be greatest among educated journalists, human resources specialists and behaviourists, social scientists and administration officers. <sup>[41]</sup> At the same time, there is a surplus of workers within culture, media and design, social work, transport and sales, purchasing and marketing, resulting in a high competition for jobs. <sup>[42]</sup>

To deal with surpluses there are general measures related to education and labour market policies. These concern, for instance: strengthening strategic governance structures at the local and regional levels; ensuring better policy integration between employment, skills, and economic development actors <sup>[43]</sup>; increasing employers' engagement with the employment and skills system through greater outreach efforts and targeted programmes; better links between the supply and demand of skills through the use of career pathways / cluster models; and considering the strategic use of public procurement in tackling disadvantage and promoting inclusive growth.

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## Note on the methodology

The list has been compiled by Cedefop in the first half of 2016 combining quantitative and qualitative methods. In particular, a list of mismatch occupations was formulated following quantitative analysis of labour market indicators. Country experts were then asked to build on and scrutinise this list. Their expert assessment and knowledge of the country's labour market has provided rich insights about the reasons behind the skills shortages or surpluses at occupational level. These are also accompanied by measures and policies that aim to tackle such mismatches. Country's stakeholders have also been included in validating the final list of occupations.

Find here more [data](#) and [information](#) about Sweden.

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## References

[1] ISCO 311 Physical and engineering science technicians, ISCO 214 Engineering professionals (excluding electrotechnology).

[2] The professions listed are in high demand. If some from outside of Sweden has offered a job in a profession on this list, one can apply for a work permit from Sweden (the sentence is not clear). Overview of the list can be found here: [Work in Sweden \(2016\), Labour Shortage list](#) [accessed 05-04-2016] [work.sweden.se/working-in-sweden/labour-shortage-list](http://work.sweden.se/working-in-sweden/labour-shortage-list)

[3] Cited from: Statistics Sweden (2014), Trender och Prognoser 2014 befolkningen | utbildningen | arbetsmarknaden med sikte på år 2035

[4] Swedish Government (2015), [Labour market policy initiatives in the spring budget](#) [accessed 05-03-

2016] [www.regeringen.se/sb/d/16659/a/206398?setEnableCookies=true](http://www.regeringen.se/sb/d/16659/a/206398?setEnableCookies=true)

[5] Scania (2013), [Service technicians in demand](http://newsroom.scania.com/en-group/2013/11/25/service-technicians-in-demand/) [accessed 05-04-2016]

[6] Cedefop (2012), VET in Europe – Country report: Sweden, pp. 34.

[7] ISCO 325 Other health associate professionals, ISCO 226 Other health professionals, ISCO 223 Traditional and complementary medicine professionals

[8] Work in Sweden (2016), [Labour Shortage list](http://work.sweden.se/working-in-sweden/labour-shortage-list)

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[14] Cedefop (2012), VET in Europe – Country report: Sweden

[15] Cedefop (2012), VET in Europe – Country report: Sweden

[16] ISCO 252 Database and network professionals, ISCO 251 Software and applications developers and analysts, ISCO 133 Information and communications technology service managers.

[17] Work in Sweden (2016), Labour Shortage list: <http://work.sweden.se/working-in-sweden/labour-shortage-list/#it>

[18] eSkills for Jobs 2015, part of the [EU eSkills strategy](#), is a major cross sector, multi-stakeholder campaign from the European Commission involving more than 650 organisations across Europe



campaign from the European Commission, involving more than 600 organisations across Europe including companies, associations, education and training bodies and NGOs. The aim of the campaign is to raise awareness of the need for citizens to improve their command of information and communication technology (ICT) skills for work. The campaign is a response to the growing demand for ICT-skilled professionals which is currently not met, despite high levels of unemployment in Europe. European Commission (2015), e-skills for jobs ; <http://eskills4jobs.ec.europa.eu/about> [accessed 05-04-2016]

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[26] Work in Sweden (2016), [Labour Shortage list](http://work.sweden.se/working-in-sweden/labour-shortage-list/#education) [accessed 05-04-2016]

[27] Other 'education professions' includes: Driving instructors (Trafiklärare)

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[34] Swedish Government (2016), Education in Sweden: <https://sweden.se/society/education-in-sweden/> [accessed 05-04-2016] <http://sweden.se/society/education-in-sweden/>

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[41] As above.

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