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Kontakt/Contact

ZBW – Leibniz-Informationszentrum Wirtschaft/Leibniz Information Centre for Economics
Düsternbrooker Weg 120
24105 Kiel (Germany)
E-Mail: [rights\[at\]zbw.eu](mailto:rights[at]zbw.eu)
<https://www.zbw.eu/>

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KOF Swiss Economic Institute

The KOF Education System Factbook:
Sweden

Edition 1, December 2019

KOF

ETH Zurich
KOF Swiss Economic Institute
LEE G 116
Leonhardstrasse 21
8092 Zurich, Switzerland

Phone +41 44 632 42 39
Fax +41 44 632 12 18
www.kof.ethz.ch
kof@kof.ethz.ch

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List of Abbreviations

CVC	Curriculum Value Chain
ECVET	European Credit System for Vocational Education and Training
EPL	OECD Indicators of Employment Protection
EU	European Union
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GII	Global Innovation Index
GVA	Gross Value Added
HVE	Higher Vocational Education and Training
ISCED	International Standard Classification of Education
KOF	Swiss Economic Institute
LO	Swedish Trade Union Confederation
MYh	Swedish National Agency for Higher Vocational Education and Training
NAE	National Agency for Education
NER	Net Enrolment Ratio
OECD	Organisation for Economic Co-operation and Development
PES	Swedish Labour Market Service
PET	Professional Education and Training
SEK	Swedish Crowns
SFI	Swedish for Immigrants
SFS	Swedish Code of Statutes
TCO	Swedish Confederation of Professional Employers
UNESCO	United Nations Educational, Scientific and Cultural Organization
US\$	US Dollar
VET	Vocational Education and Training
VPET	Vocational Professional Education and Training
VPETA	Vocational and Professional Education and Training Act
WEF	World Economic Forum
WGI	Worldwide Governance Indicators
YH-poäng	Higher Vocational Education and Training Credits
YLMI	Youth Labour Market Index

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FORWORD

The increasing competitiveness of the world economy and the high youth unemployment rates after the worldwide economic crises have put pressure on countries to upgrade the skills of their workforces. Consequently, vocational education and training (VET) has received growing attention in recent years, especially amongst policy-makers. For example, the European Commission defined common objectives and an action plan for the development of VET systems in European countries in the *Bruges Communiqué on Enhanced European Cooperation in Vocational Education and Training for 2011-2020* (European Commission, 2010). In addition, a growing number of US states and other industrialized, transition, and developing countries (for example Hong Kong, Singapore, Chile, Costa Rica, Benin and Nepal) are interested in either implementing VET systems or making their VET system more labour-market oriented.

The appealing outcome of the VET system is that it improves the transition of young people into the labour market by simultaneously providing work experience, remuneration and formal education degrees at the secondary education level. If the VET system is optimally designed, VET providers are in constant dialogue with the demand-side of the labour market, i.e., the companies. This close relationship guarantees that the learned skills are in demand on the labour market. Besides practical skills, VET systems also foster soft-skills such as emotional intelligence, reliability, accuracy, precision, and responsibility, which are important attributes for success in the labour market. Depending on the design and permeability of the education system, VET may also provide access to tertiary level education (according to the ISCED classification): either general education at the tertiary A level or professional education and training (PET) at the tertiary B level. PET provides occupation-specific qualifications that prepare students for highly technical and managerial positions. VET and PET systems are often referred to together as “vocational and professional education training (VPET)” systems.

Few countries have elaborate and efficient VPET systems. Among these is the Swiss VPET system, which is an example of an education system that successfully matches market supply and demand. The Swiss VPET system efficiently introduces adolescents to the labour market, as shown by Switzerland’s 2007-2017 average youth unemployment rate of 8.1 percent compared to 14.8 percent for the OECD average (OECD, 2017d).

Though not many countries have VPET systems that are comparable to Switzerland’s in terms of quality, efficiency and permeability, many have education pathways that involve some kind of practical or school-based vocational education. The purpose of the KOF Education System Factbook Series is to provide information about the education systems of countries across the world, with a special focus on vocational and professional education and training.

In the KOF Education System Factbook: Sweden, we describe Sweden's vocational system and discuss the characteristics that are crucial to the functioning of the system. Essential components comprise the regulatory framework and the governance of the VPET system, the involved actors, and their competencies and duties. The Factbook also provides information regarding the financing of the system and describes the process of curriculum development and the involved actors.

The Factbook is structured as follows: First, we provide an overview of Sweden's economy, labor market, and political system. The second part is dedicated to the description of the formal education system. The third section explains Sweden's vocational education system. The last section offers a perspective on Sweden's recent education reforms and challenges to be faced in the future.

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The KOF Education System Factbooks should be regarded as work in progress. The authors do not claim completeness of the information which has been collected carefully and in all conscience. Any suggestions for improvement are highly welcome!

Contact: factbook@kof.ethz.ch

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1. The Swedish Economy and its Political System

One of the main purposes of a system of education is to provide the future workforce with the skills it needs in the labour market. The particularities of a country's economy and labour market are important factors which determine the current and future demand for skills. Therefore, these skills are briefly described in the first part of this Factbook. In addition, this part provides an overview of Sweden's political system with an emphasis on the description of education politics.

1.1 The Swedish Economy

Sweden's economy is renowned for its strength, as it provides its citizens with a good standard of living. The wealth of the Swedish economy translated into a gross domestic product (GDP) per capita of 45,486 USD¹ compared to the OECD average of 38,898 USD in 2017. Sweden's GDP in 2017 was higher than its direct neighbour Finland 39,711 USD and lower than that of Norway: 60,445 USD in 2017 (OECD, 2018b).

Despite high wealth levels, the Swedish economy depicted a lower GDP growth of 2.14 percentage points per annum than the OECD average of 2.21 percentage points in the years between 1990 and 2017. Thanks to its strong macroeconomic, fiscal and financial fundamentals and a competitive and diversified corporate sector Sweden came through the global financial and economic crisis with limited damage (OECD, 2017a) (OECD, 2018a).

The KOF Globalisation Index measures the degree of globalisation in terms of economic, social and political dimensions². According to the KOF Globalisation Index (KOF, 2018a), Sweden became much more open in economic, political and social terms between 1970 and 2015. The value of the overall index amounted to 69.5 index points in 1970 and rose to 88.1 index points in 2015, while the average for high-income countries grew from 56.9 to 76.6 over the same period. According to the KOF economic globalisation index,³ Sweden ranked 15th out of 178 countries in 2015.

The tertiary sector is the most important sector of the Swedish economy, as it generated 73.7 percent of gross value added (GVA) in 2017, which is typical for a developed country. Moreover, 78.2 percent of all employees were employed in the tertiary sector in 2017, which highlights its importance. Major players of Sweden's tertiary sector were the industries of information technology, pharmacy, real estate and export (Ekonomifakta, 2019).

¹ Constant prices, constant purchasing power parity (PPP), reference year 2017.

² Through these three dimensions, the overall KOF Globalization Index tries to assess current economic flows, economical restrictions, data on information flows, data on personal contact, and data on cultural proximity within surveyed countries. The higher the index, the more open a country.

³ The KOF Index of Globalisation measures the economic, social and political dimensions of globalisation.

The primary and secondary sector are less important for Sweden's economy in terms of employment and GVA. In 2017, the contribution of Sweden's primary sector to GVA amounted to 1.2 percent, which is lower than the EU-28 average of 1.6 percent. Moreover, the employment rate of 2.1 percent in the primary sector was lower than the EU-28 average of 4.4 percent. This indicates that the primary sector of Sweden has been more productive, as it needed fewer workers to achieve a slightly lower added value.

The productivity of the secondary sector relative to GVA was the same for both Sweden and the EU-28 countries: 25.1 percent. The interesting part of this comparison is that, in Sweden, fewer people are employed in this sector than in the EU-28 average, with 19.7 percent versus 21.6 percent. This implies that Sweden's secondary sector is more productive (Table 1).

Table 1: Value added and employment by sector, 2017

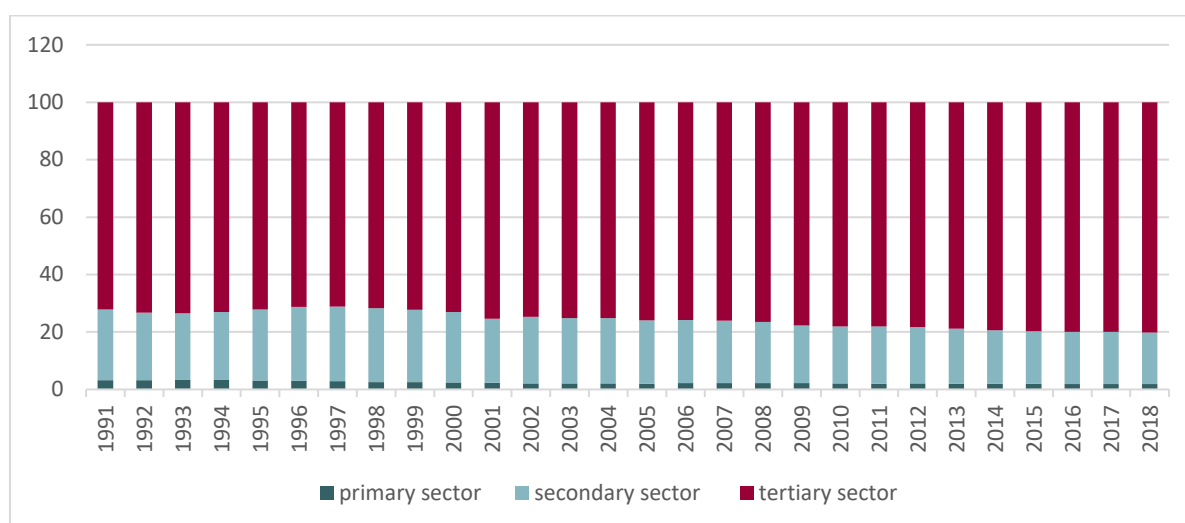
Sector	Sweden: Value added (%)	EU-28: Value added ⁴ (%)	Sweden: Employment (%)	EU-28: Employment (%)
Primary sector	1.2	1.6	2.1	4.4
Agriculture, hunting and forestry, fishing	1.2	1.6	2.1	4.4
Secondary sector	25.1	25.1	19.7	21.6
Manufacturing, mining and quarrying and other industrial activities	18.7	19.7	12.4	15.3
of which: Manufacturing	15.4	16.4	11.1	13.8
Construction	6.4	5.4	7.3	6.3
Tertiary sector	73.7	73.4	78.2	73.9
Wholesale and retail trade, repairs; hotels and restaurants; transport; information and communication	24.6	24.1	24.1	27.8
Financial intermediation; real estate, renting & business activities	24.3	27.3	15.1	16.5
Public administration, defense, education, health, and other service activities	24.8	22.0	39.0	29.6

Source: Eurostat (2018a; 2018b).

Figure 1 shows the historical development of the employment by sector from 1991 until 2017. The importance of the tertiary sector in terms of employment has further evolved over the last 20 years: The share of employment in this sector rose from 72.1 percent in 1991 to 80.2 percent in 2017. In contrast to the rise of employment in the tertiary sector, the share of employment in the other sectors shrunk.

⁴ Due to rounding differences, the sum of all sector falls below 100 percent.

Figure 1: Employment by sector (as % of total employment), 1991-2018



Source: (World Bank, 2018).

According to the WEF Global Competitive Index (GCI) rankings for 2016-2017 (WEF, 2018a), Sweden was ranked 6th out of 138 countries. The GCI report indicates that the strengths of the Swedish economy are its institutions, macroeconomic environment, technological readiness, innovation, higher education and training. Furthermore, the GCI report states that the Swedish labour market is functioning quite well and that Sweden has a high employment rate with a large proportion of women in the labour force. However, there is still room for improvement in labour-market flexibility: Sweden has dropped 26 places to 120 in the effect of taxation on incentives to work, and restrictive working arrangements are seen as the second most problematic factor for doing business (WEF, 2018b).

The Global Innovation Index (GII) of 2018 ranked Sweden 3rd out of 126 countries. This is mainly due to its general infrastructure, education, research & development, knowledge of the workers, innovation linkages and more. However, the GI states that Sweden has to perform better in cost of redundancy dismissal and in ease of getting credit (Dutta et al., 2018).

1.2 The Labour Market

In the first part of this section, we will describe the general situation of Sweden's labour market. In the second part, we will refer to the youth labour market in particular.

1.2.1 Overview of Sweden's Labour Market

In the last decades, the employment situation on the Swedish labour market remained stable. In 1994, 9.6 percent of all the Swedish people aged between 15 and 65 were unemployed. This figure rose to 10.4 percent in 1997, which was a peak point in the entire time until today. Even during the global economic crisis, the Swedish labour market was not hit as hard as other European countries: its unemployment rate rose from 6.2 in 2008 to 8.3 percent in 2009, 8.6

percent respectively in 2010. In 2017, the overall unemployment rate was 6.7 percent (World Bank, 2018).

In 2016, the number of people employed (16-64 years) on the Swedish labour market rose by 77,000 or 1.7 percent. Employment increased in both private and public sectors. Sweden has the highest employment rate of all EU member states, and it is estimated that it will continue to grow among the native born and foreign-born Swedish population (European Commission, 2018).

The number of vacancies reported in 2017 to the Swedish Labour-market Service (PES) was relatively high, which means that Swedish employers need well-trained staff. However, as in all Western countries, the need for well-trained staff has increased, which means that applicants without upper-secondary education have been dealt a bad hand. In addition to the increase in jobs which require tertiary education, it is expected that the number of jobs requiring upper-secondary education will also increase. This means that competition for these posts will intensify as tertiary graduates apply for them. This makes it increasingly difficult for poorly educated workers to remain in the world of work in the long term (European Commission, 2018).

The Swedish labour market for permanent workers is one of the most regulated among OECD countries, whereas the labour market for temporary workers is less regulated. According to the 2013 OECD Indicators of Employment Protection (EPL), which is a multidimensional index that quantifies the strictness of EPL across countries (where *zero* refers to a low and *six* to a high level of EPL) (OECD, 2015c), Sweden ranks among the 20 most regulated countries. On the index, Sweden has an EPL score of 2.5 for permanent workers and a score of 1.2 for temporary workers compared to the OECD average of 2.04 for permanent and 1.72 for temporary workers (OECD, 2015c) (OECD, 2015b).

Sweden has no general statutory minimum wage. The minimum wage is sector-specific and is regulated in collective agreements between social partners (Eurostat, 2018c). The trade-union density in Sweden was 66.7 percent in 2016. In comparison, Germany's union density was 17 percent that same year. This shows that, in Scandinavian countries, trade unions are very popular; the trade-union density of Finland, which was 64.6 percent in 2016, underlines this (OECD, 2018c).

Table 2 shows the Swedish labour-force participation and unemployment rates along with the OECD average for 2017. In 2017, the overall Swedish labour-force participation rate (15-64 years) was higher than the OECD average: 82.5 percent versus 72.1 percent. The overall unemployment rate of the Swedish labour force was slightly higher compared to the OECD: 6.8 percent versus 5.9. The labour-force participation of youth (15-24 years) in Sweden was higher than the OECD average: 54.5 percent versus 47.3 percent of youth were either

employed or actively searching for a job. With regard to the unemployment rate of youth, the figures are different. In Sweden, 17.8 percent of the youth were searching for a job, which is much higher than the OECD average of 11.9 percent.

Table 2: Labour-force participation rate, unemployment rate by age 2017

Age Group	Labour force participation rate		Unemployment rate	
		OECD average		OECD average
Total (15-64 years)	82.5	72.1	6.8	5.9
Youth (15-24 years)	54.5	47.3	17.8	11.9
Adults (25-64 years)	88.8	77.7	5.3	5.1

Source: OECD (OECD, 2017b)

An interesting fact about Sweden is that, according to the OECD (OECD, 2018d), nearly 90 percent of dismissed workers have a new job within one year. In contrast, in France, the figure amounts to nearly 30 percent. One reason for this high figure is that job-security councils make early interferences, which are provided by the social partners. According to the OECD, Sweden should focus on reducing the youth-unemployment rate, as it is three times higher than the unemployment rate of adults (OECD, 2018d) (OECD, 2017b).

Table 3: Labour-force participation rate, unemployment rate by educational attainment 2016 (persons aged 25-64)

Education Level	Labour force participation		Unemployment rate	
	Country	OECD average	Country	OECD average
Less than upper secondary education	76.0	64.0	13.3	12.0
Upper secondary level education	89.1	80.2	4.3	6.9
Tertiary education	93.1	88.3	3.8	4.5

Source: (OECD, 2016a)

Table 3 shows the labour-force participation and unemployment rate by educational attainment. When disaggregated by educational level, Swedish workers were more likely to participate in the labour market irrespective of education level than the OECD average. Except for workers with less than an upper-secondary education (13.3 percent for Sweden versus 12 percent for the OECD average), Swedish workers were less likely to be unemployed than the OECD average (upper secondary, 4.3 percent versus 6.9, and tertiary level, and 3.8 percent versus 4.5).

1.2.2 The Youth Labour Market

The KOF Swiss Economic Institute developed the KOF Youth Labour-market Index (KOF YLMI) to compare how adolescents participate in the labour unemployment rate, can suffice to describe the youth labour market adequately or provide enough information for a comprehensive cross-country analysis. To increase the amount of information analysed and to foster a multi-dimensional approach, the KOF YLMI consists of 12 labour-market indicators⁵ that are grouped into four categories. market across countries (Renold et al., 2014). The foundation for this index is the criticism that no single indicator, such as the

Dimensions of the KOF YLMI
Activity state <ul style="list-style-type: none"> - Unemployment rate - Relaxed unemployment rate⁶ - Neither in employment nor in education or training rate (NEET rate)
Working conditions <p>Rate of adolescents:</p> <ul style="list-style-type: none"> • with a temporary contract • in involuntary part-time work • in jobs with atypical working hours • in work at risk of poverty⁷ • vulnerable unemployment rate⁸
Education <ul style="list-style-type: none"> • Rate of adolescents in formal education and training • Skills mismatch rate
Transition smoothness <ul style="list-style-type: none"> • Relative unemployment ratio⁹ • Long-term unemployment rate¹⁰
Source: Renold et al. (2014).

The first category describes the *activity state* of youth (ages 15-24 years old) in the labour market. Adolescents are classified according to whether they are employed, pursuing education or neither (unemployed, discouraged and neither in employment nor in education or training—see info box to the right). The category *working conditions* and the corresponding indicators reflect the type and quality of jobs the working youth have. The *education* category accounts for the share of adolescents in education and training and for the relevance of their skills on the labour market. The fourth category, *transition smoothness*, connects the other three categories by capturing the school-to-work transition phase of the youth. Each country obtains a score of one to seven on each particular indicator of the KOF YLMI. A higher score reflects a more favourable situation regarding the youth labour market and a more efficient integration of youth into the labour market.

One of the major drawbacks of the KOF YLMI is data availability. When data is lacking, a category can occasionally be based on a single indicator or must be omitted entirely when no single indicator for that category exists in a given country. A lack of indicators can make

⁵ The data for these indicators are collected from different international institutions and cover up to 178 countries for the time period between 2005 and 2016.

⁶ It is calculated as the number of unemployed and discouraged workers as a share of the entire labour force. Discouraged workers have given up the search for work (not actively seeking), although they have no job and are currently available for work (also: “involuntary inactive”).

⁷ Those who cannot make a decent living out of their earnings, being at risk of poverty as a percentage of the working population.

⁸ Share of the employed population working on their own account or those working in their family business and thus contributing to the entire family income. Both are less likely to have formal work arrangements and are therefore less protected by labour laws and more exposed to economic risk.

⁹ Is defined as the youth unemployment rate (15-24 years) as a share of the adult unemployment rate (25+). If the youth cohort is affected in the same way than the adult group with respect to unemployment, then the relative unemployment ratio will be equal to one. If the youth are relatively more affected, then the ratio will be bigger than one.

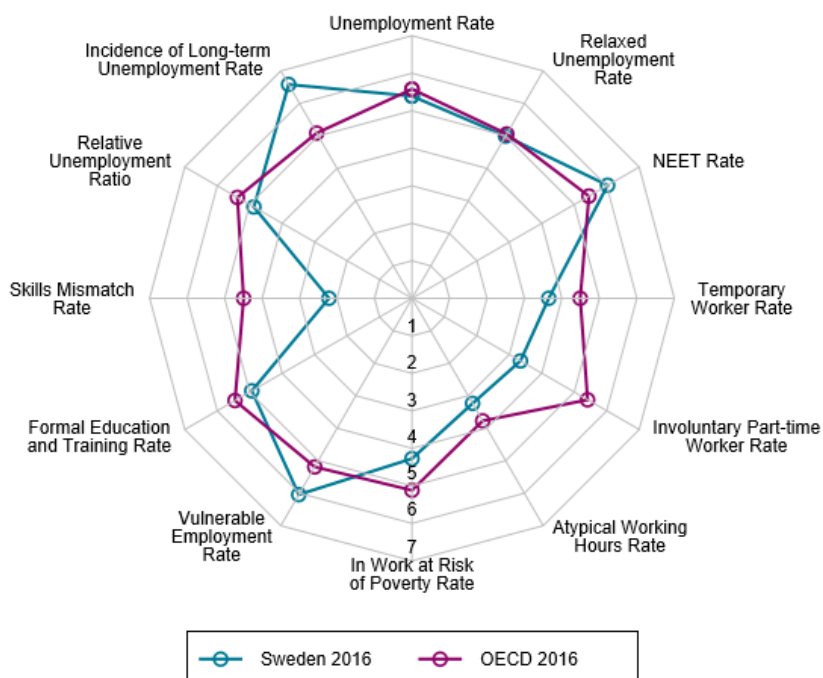
¹⁰ Those unemployed for more than one year (52 weeks) in the total number of unemployed (according to the ILO definition).

comparisons across certain countries or groups of countries problematic and sometimes even impossible.

1.2.3 The KOF Youth Labour Market Index (KOF YLMI) for Sweden

All indicators of the KOF YLMI for Sweden are available. Given the relatively good labour-market prospects in Sweden, it is surprising that Sweden scores in most dimensions of the KOF YLMI below that of the OECD average for 2016, as can be seen in Figure 2. The only three scores for which Sweden is above the OECD average are incidence of long-term unemployment rate, NEET rate and vulnerable employment rate. The NEET rate indicates the score of young people who are not part of the labour force; they are neither gainfully employed nor unemployed, nor do they acquire new skills through education or training. The vulnerable employment rate is the last indicator which is used to describe working conditions. This indicator is used to quantify the proportion of young workers who are less protected by labour rights than older workers and therefore more exposed to the risks of business cycles. Furthermore, the indicator *incidence of long-term unemployment rate* refers to the number of youths who have been unemployed for more than one year of the total of all unemployed youths (Pusterla, 2016).

Figure 2: YLM Scoreboard: Sweden versus OECD average, 2016

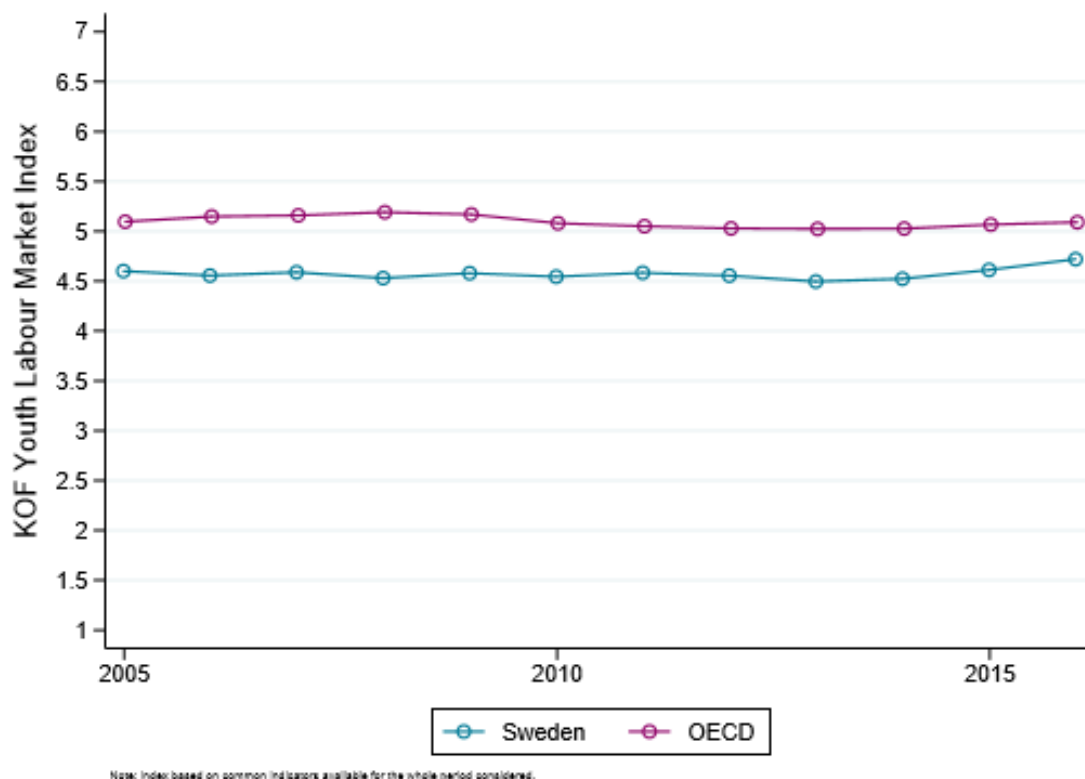


Source: (KOF, 2018b)

Figure 3 illustrates the evolution of the aggregated KOF YLMI for Sweden and the OECD average between 2005 and 2016. All 12 values of the Swedish youth labour market are

available over 2005-2016. Figure 3 shows that, since 2005, the KOF YLMI for Sweden has been slightly below the OECD average. This reflects what can be seen in Figure 2, which shows that Sweden performs below the OECD level for most of the indicators. For example, one of eight pupils in Sweden would like to work full-time but cannot find a full-time job. This is nearly twice as high as it is in the OECD average, where only one out of 14 cannot find a full-time job. Therefore, involuntary part-time work and temporary work are common (OECD, 2016b). For the whole time-period, both indices remained more or less stable, but since 2014 the Swedish index started to adjust to the OECD average.

Figure 3: YLM-Index: Sweden versus OECD, 2005 – 2016



Source: (KOF, 2018b)

1.3 The Political System

Understanding the basics of a country's political system and getting to know the political goals with respect to its education system are crucial points for the understanding of the education system in a broader sense. In the first part of this section, we explain Sweden's political system in general. The politics and goals regarding the education system are referred to in the second part.

1.3.1 Overview of the Swedish Political System

The Swedish Constitution was introduced in 1809 and amended in 1975. Today, Sweden is a parliamentary constitutional monarchy. However, the sitting monarch has no political power;

his competences are limited to ceremonies only. In Sweden, the constitution limits and divides the power of elected officials across a number of branches. The three powers are the executive, the legislative and the juridical (Britannica, 2018b) (Svergies Riksdag, 2016).

The prime minister is nominated by the *Riksdag* spokesman after consultation with party leaders and must be admitted to office by a *Riksdag* vote. The prime minister then appoints the other members of the cabinet. In Sweden, the cabinet is responsible for all government decisions, which means that the cabinet performs the executive branch together with the prime minister. The *Riksdag*, a unicameral parliament elected by the people for four years, performs the legislative branch and is the basis for the democratic exercise of power by the cabinet. The *Riksdag* appoints its spokespersons, deputy spokespersons and standing committees, in which the parties are represented in proportion to their strength. The juridical branch is performed by the courts. Sweden has a three-tier hierarchy of courts: the district courts (*tingsrätter*), the intermediate courts (*hovrätter*) and the supreme court (*högsta domstolen*). The dominant role is played by the district courts (Britannica, 2018b) (CIA, 2018).

According to the Worldwide Governance Indicators (WGI) 2017, Sweden ranks among the top national governments in voice and accountability, government effectiveness, regulatory quality, rule of law and control of corruption. However, the WGI ranks Sweden only in the top half for political stability (World Bank, 2017a). *The Economist* regards the Swedish democracy to be a full democracy and ranks Sweden 3rd out of 167 countries, with an overall score of 9.39 out of 10 in its 2017 index. According to *The Economist*, this high score is due to the functioning of the government, political culture, civil liberties and electoral process and pluralism. The only coefficient which is under 9.39 is for political participation, which is 8.33 (Economist, 2017). According to the Corruption Perception Index, Sweden has slightly decreased its score since 2012. Nevertheless, Sweden is still among the top countries, as they are ranked 6th out of 180 countries together with Singapore (Transparency International, 2017).

1.3.2 Politics and Goals of the Education System

According to Article 18 of the Constitution of Sweden, all children at the compulsory-school level are entitled to free basic education in the public-education system. Moreover, the constitution states that the *Riksdag*, as the legislative branch, has to appoint an education committee. The committee in Sweden is the Ministry of Education and Research, which prepares matters relating to the school system, certain special forms of education, and higher education and research (Svergies Riksdag, 2016).

In the recent years, a new challenge has evolved for the Swedish government. The war in the Middle East led to the departure of many. Some refugees are now seeking asylum in Sweden. This issue of taking and integrating them has led to new dynamics amongst the political parties.

Therefore, longstanding alliances are cut short and new alliances are formed, and the power of right-wing parties is increasing (Detlef Jahn et al., 2017).

Traditionally, Sweden has been characterised by political and economic stability, high taxes and a generous welfare state. These characteristics are now suffering a downturn as Sweden becomes more diverse, and Sweden will face increased unemployment, lower quality of life and health in the future. Therefore, right-wing populist parties are experiencing an upswing. (Detlef Jahn et al., 2017).

2. Formal System of Education

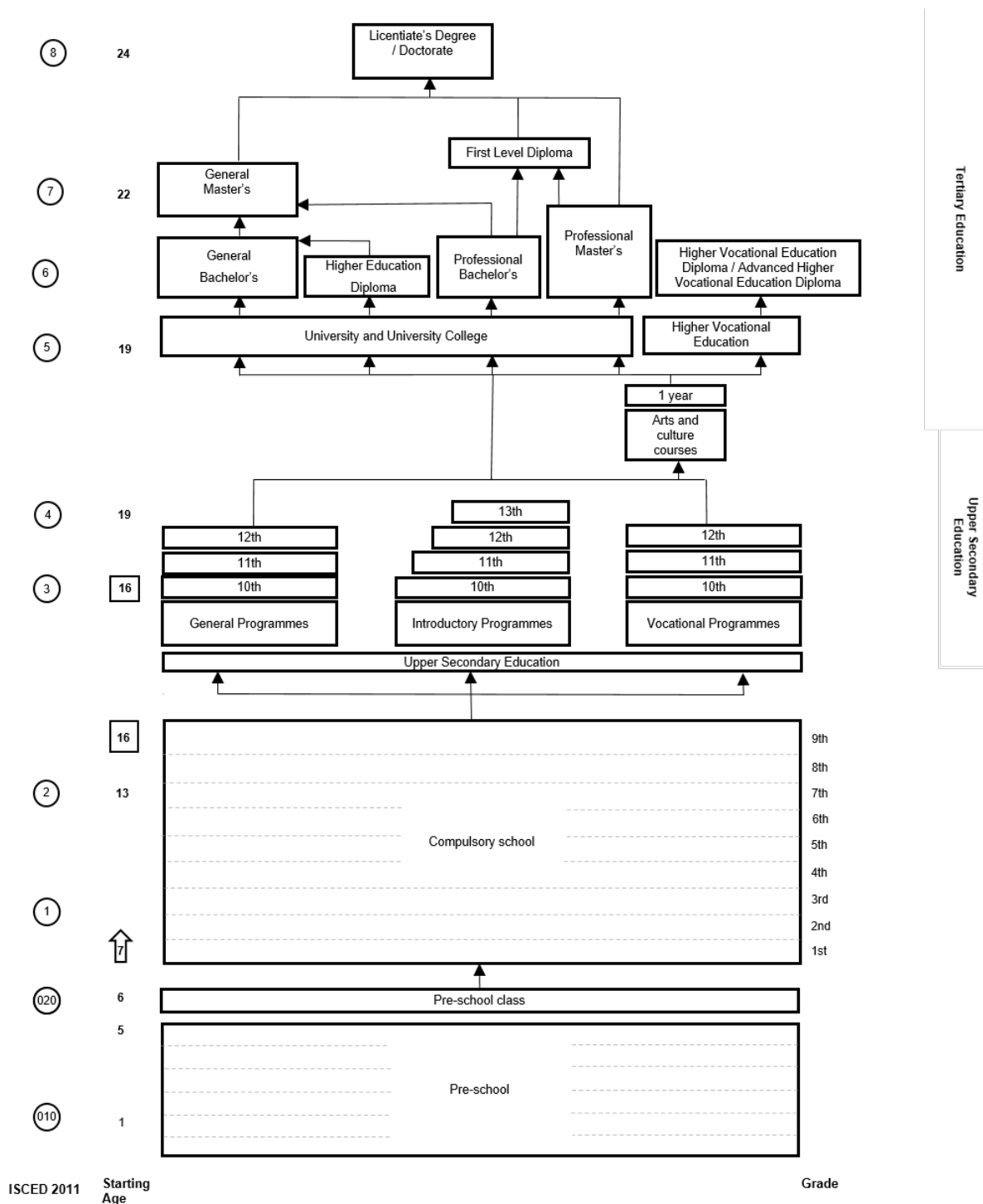
The Swedish education system is divided into five levels: preschool (*förskola*), preschool classes (*förskoleklass*), compulsory school (*grundskola*), upper-secondary school (*gymnasieskola*) and higher education. Pupils aged one to five can attend pre-school; afterwards they can attend one year of pre-school classes. According to the Swedish Education Act, preschool is free for all pupils aged three or higher. Compulsory education lasts nine years; it is typically for students are aged between seven and 16. Compulsory education consists of primary-school and lower-secondary education, and it is free for all students. After successful completion of compulsory school, children progress to upper-secondary schools, which are for children aged 16 to 19. Education at this stage is also free of charge, as is higher education in Sweden (Eurydice, 2018a).

The state and public educational institutions cover the funding of the education system in Sweden. According to data from 2012, Sweden spends 11,400 USD per year per student on primary education until upper-secondary, education and 19,961 USD per student at the tertiary-education level. Interestingly, both of these figures are above the OECD average for 2012, where 2,000 USD less was spent for primary to upper-secondary education and nearly 6,000 USD less (13,719) was spent for tertiary education (OECD, 2012) (Britannica, 2018a) (Eurydice, 2018a).

The national school system is governed by the Education Act, which was adopted by the parliament. The Education Act contains general regulations for all types of schools. The national curriculum adopted by the government defines the tasks and overall objectives of upper-secondary education and the values that should form the basis for teaching. The parliament decides on upper-secondary education and on which topics should be common core subjects. The government sets the objectives of the programme and defines the purpose and objectives of each national programme. The National Agency for Education adopts curricula (Eurydice, 2018a).

An illustration of the Swedish education system with its various education paths is shown Figure 4.

Figure 4: The Swedish education system



Source: Own illustration (OECD, 2016e)

Table 4 shows the net enrolment ratio (NER)¹¹ and gross enrolment ratio (GER)¹² by education level for the year 2016. The NER quantifies the total number of enrolled students in the official age for a given education level, expressed as a percentage of the total population in that age group. The GER quantifies the number of students enrolled at a given education level—irrespective of age—as a percentage of the population in the official age for that level of education. For example, for the primary education level, the NER tells how many students in the typical primary school age are actually enrolled in primary school while the GER sets the actual number of students in primary education—irrespective of age—in relation to those who are in the official age to attend primary education¹³.

The NER for compulsory education for Sweden is close to 100, which implies that almost all pupils in the typical age are enrolled in compulsory education. Further details of Table 4 and 5 will be discussed in sections 2.1 to 2.4 below.

Table 4: Net enrolment rate (NER) and gross enrolment ratio (GER) in Sweden, 2016 (in %)

Educational level	ISCED 2011	Net Enrolment Ratio	Gross Enrolment Ratio
Early childhood education	010	n/a	85.38
Pre-primary education	020	93.69	94.08
Primary education	1	99.35	124.85
Secondary education	2 – 3	99.06	144.91
<i>Lower secondary education</i>	2	97.49	117.84
<i>Upper secondary education</i>	3	95.95	172.32
<i>Net enrolment rate of 15-24 year-olds enrolled in vocational secondary education</i>	2-3	12.03	n/a
Compulsory education age group	4	99.67	7.59
Tertiary education	5 – 8	n/a	63.55

Source: (UNESCO, 2018b)

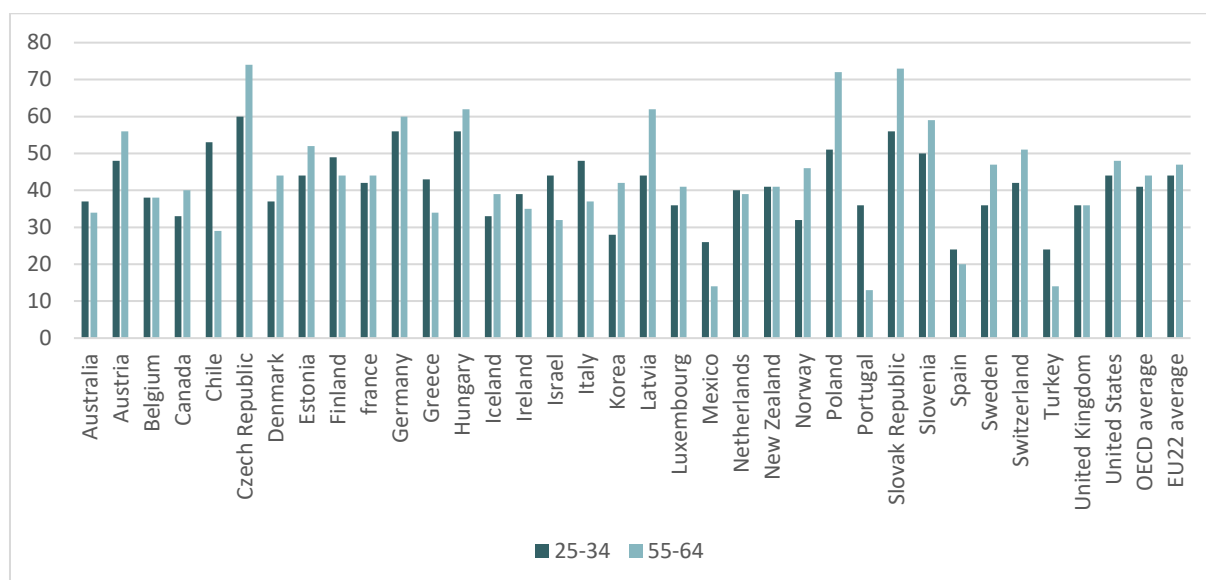
Figure 5 shows the distribution of people aged 25-34 and 55-64 who have attained upper-secondary or post-secondary education for all OECD countries for 2017. It emphasizes that about 36 percent (47 percent) of those aged 25-34 (aged 55-64) in Sweden have attained upper-secondary or post-secondary education versus 41 percent (44 percent) for the OECD average.

¹¹ The UIS (2017a) defines the net enrolment ratio as the “Total number of students in the theoretical age group for a given level of education enrolled in that level, expressed as a percentage of the total population in that age group.”

¹² The UNESCO Institute for Statistics (UIS) (2017a) defines the gross enrolment ratio as the “number of students enrolled in a given level of education, regardless of age, expressed as a percentage of the official school-age population corresponding to the same level of education.”

¹³ A gross enrollment ratio of 100 corresponds to a situation where each child in a given country is enrolled in the corresponding education level. A value above 100 could occur due to students who are older than the typical enrolment age for primary education (e.g. have to repeat grade, adult learners). A value below 100 implies that not everyone who is in the typical age for primary education is actually enrolled.

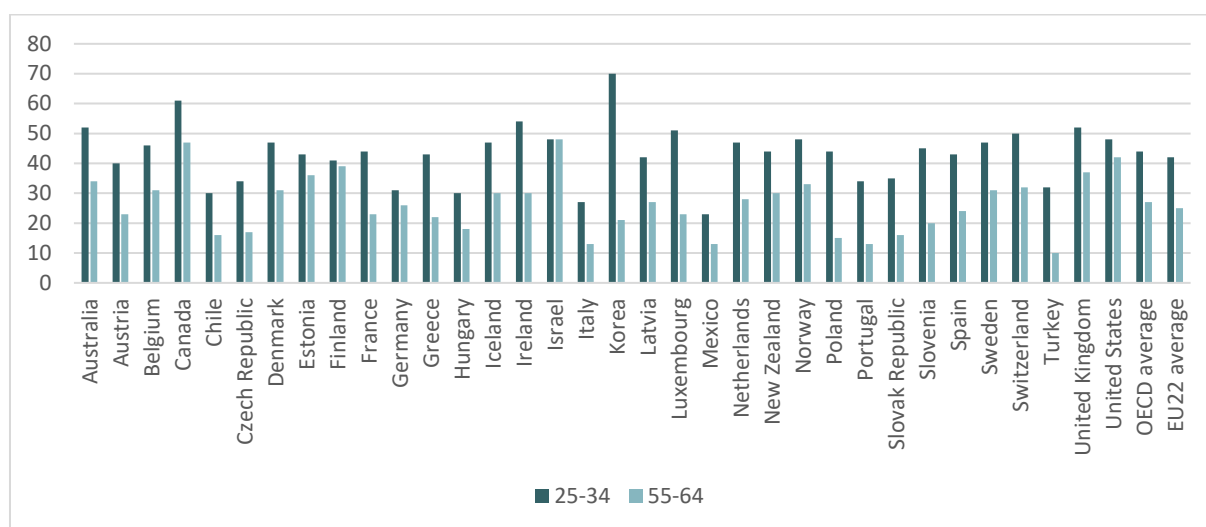
Figure 5: Percentage of population that has attained upper-secondary or post-secondary non-tertiary education in OECD countries (2017)



Source: (OECD, 2018f)

Figure 6 shows the distribution of people aged 25-34 and 55-64 who have attained tertiary education for all OECD countries for 2017. It shows that about 47 percent (31 percent) of those aged 25-34 (aged 55-64) in Sweden have attained tertiary education versus 44 percent (27 percent) for the OECD average. The percentage of those aged 25-34 who have attained tertiary education is among the top ten of the OECD countries. One reason for this could be that in Sweden education is nearly free of charge all over the complete educational path (Eurydice, 2018a).

Figure 6: Percentage of population that has attained tertiary education in OECD countries (2017)



Source: (OECD, 2018f)

2.1 Pre-primary Education

Pre-primary education is designed for children aged one to six. The NER and GER for pre-primary education shown in Table 4 are 93.7 and 94.1 percent in 2016, respectively. The NER quantifies how many children in the typical age (one to six) are actually enrolled in pre-primary education. Given that compulsory schooling starts at age six, an NER of 93.4 percent of all children aged one to six attending pre-primary education is quite high.

Pre-primary education in Sweden comprises two stages: pre-school from the age of one to five, after which children have the possibility to attend pre-primary classes, which is for pupils aged six to seven. A third stage, which is involved in pre-primary education, includes the use of leisure-time centres. These centres are designed for pupils aged one to 12, for the time of the day when the schools are closed but the parents are still at work and for holiday time (Eurydice, 2018a) (Skolverket, 2011).

The Swedish Education Act states that, in Sweden, education is free of charge from the age of three onwards. Therefore, pre-primary education is nearly free of charge. Parents who wish to enrol their children earlier than age three are required to pay for pre-school, but the fees are calculated in relation to their income, which means that low-income families do not need to pay for the service. Moreover, the maximum fee per year is limited to SEK 1,287 (around 140 € a month). The Swedish Parliament and Government regulate through the Education Act and the curricula, in which they set out the guidelines and objectives of the pre-primary education. According to the Swedish Education Act, communities are required to provide pre-school education, pre-school classes and childcare (Eurydice, 2018a) (Skolverket, 2011).

2.2 Primary and Lower Secondary Education

Compulsory schooling starts at the age of seven. Parents who wish to enrol their children at the age of six or eight have to make this decision with the respective school principal (Eurydice, 2018b) (Skolverket, 2018a). The NER for primary education, as shown in Table 4, is 99.4 and the NER for lower-secondary education is 97.5, which indicates how many children in the typical school age (six to eight) are enrolled in primary school and lower-secondary education.

According to the Swedish Education Act (Skollagen, SFS 2010:800), all pupils aged seven to 16 have the right to free compulsory education for nine years. The communities are responsible for the organization of compulsory schooling. Other institutions that are eligible to offer compulsory school are grant-aided independent schools (Eurydice, 2018b) (Skolverket, 2018a).

The obligatory curriculum contains the following subjects: English, art, mathematics, biology, chemistry, physics, geography, history, religion, crafts, Swedish, Sami, civics and many more.

Each school subject is graded on a scale from A to F. Five levels, *A-E*, represent passing scores, and *F* represents a non-passing result (Eurydice, 2018b) (Skolverket, 2018a).

In the third, sixth and ninth years of compulsory education, a number of obligatory national examinations take place to evaluate the students' knowledge. The results are then compared and goals are noted in the curriculum to obtain clues as to whether something needs to be changed in class or not. Students in the third year have national examinations mathematics and in Swedish/Swedish as a second language. Students in the sixth year have national examinations in Swedish/Swedish as a second language, mathematics and English. In the ninth year, students take national examinations in Swedish/Swedish as a second language, mathematics, English, one of the social-science subjects (geography, history, religious studies or social sciences) and one of the natural-science subjects (physics, chemistry or biology) (Eurydice, 2018b).

2.3 Upper-secondary Education

2.3.1 General Upper-secondary Education (Introductory Programs)

The curriculum for all upper-secondary programs contains physical education and health, Swedish, English, history, social studies, religion, mathematics and science studies. Moreover, each student has to choose one of the 18 possible national programs. Of these 18 programs, six are introductory and 12 are vocational programs. The six introductory programs for higher education are the following:

- The Art, Music and Drama Program
- The Humanities Program
- The Business-management and Economics Program
- The Social-science Program
- The Natural-science Program
- The Technology Program

The vocational programs are depicted in Figure 8. According to the choice made by the student, each student has, in addition to the above-mentioned subjects, other subjects that relate to the chosen program. All of these programs last three years, and the students are required to have achieved a minimum of a passing grade in Swedish, English and mathematics and in at least five other subjects. Pupils who do not meet the qualification demands may follow an introductory program. Nearly all pupils continue to upper-secondary school after finishing compulsory school (Eurydice, 2018c).

Municipalities and grant-aided schools are obliged to provide students aged 16 to 19 with upper-secondary education free of charge and give them access to books, tools and other equipment. Grant-aided independent schools at the upper-secondary level have to be approved by the Swedish Schools Inspectorate. They are not allowed to charge tuition fees. Furthermore, vocational and general upper-secondary education is provided within the same institutions run by municipalities, county councils or independent organizations in grant-aided independent schools (Eurydice, 2018c).

For the school year 2016/2017, 343 of 900 pupils attended upper-secondary education. Approximately 27 percent of the pupils studied one of the 12 vocational programs, and 54 percent attended one of the six general programs, which prepare pupils for higher education (Eurydice, 2018c).

2.3.2 Vocational upper-secondary education (Apprenticeship programs)

In 2011, the Education Act (2010:800) was reformed and supported by the Upper Secondary Ordinance (2010:2039). These acts introduced regulations for the control of apprenticeship training. They were drawn up by the Swedish government and the Swedish National Agency for Education. (Skolverket, 2014) (Eurydice, 2018d).

In Sweden, two ways exist to study a vocational program at the level of upper-secondary education. Students can apply either for school-based education (*skolförlagd utbildning*) or for apprenticeship education (*lärlingsutbildning*). The main difference between these two programs is that the proportion of work-based training is different. While at least 15 weeks of training in the school-based educational track should be offered as work-based training, in the apprenticeship track, half of the training should consist of workplace training. Upper-secondary apprenticeship can start in the first, second or third year. In apprenticeship training, the school is responsible to ensure that each apprentice signs a binding training contract. The training contract should specify the content and scope of workplace learning. The student, the educational organizer and the workplace should sign the contract and a contact person and/or a trainer/supervisor should be named in the contract. Diploma objectives, subject curricula and orientations are the same for both the school-based and the apprenticeship tracks. The same applies to the admission and diploma conditions (Skolverket, 2014) (Eurydice, 2018d).

As seen in section 2.3.1, to be eligible to enrol in one of the 12 vocational programs, students are required to have a passing grade in Swedish, English and mathematics and passing grades in at least five other subjects. The programs are modular and organized in courses, with one course usually comprising 100 credits. All programs cover basic subjects (e.g., Swedish,

English and mathematics) and subjects of the relevant vocational program (e.g., retail and automotive engineering) (Skolverket, 2014).

The schools decide whether a vocational program is offered as apprenticeship training and when the training begins. The pupil chooses which track he or she wants to pursue. Educational providers are responsible for ensuring that all students have access to staff who are able to meet their needs for guidance and counselling before deciding on education and career guidance. Moreover, upper-secondary schools are responsible for finding jobs and deciding on the organization, planning and follow-up of apprenticeship training. Apprenticeship training can therefore be organized in different ways. One school can have so-called “apprentice classes”, in which pupils are enrolled in various vocational programs and meet at school for joint lessons in the basic subjects. At another school, there might be only a handful of students who pursue the apprenticeship path in a vocational program. While many start their job-related learning in the first year at secondary school, others will only do so in the second or third year (Skolverket, 2014).

Upon conclusion of upper-secondary vocational education, either as school-based education or as apprenticeship, pupils obtain a vocational qualification for upper-secondary education. To obtain the diploma the students need to have grades that at least cover 2,500 credits (Skolverket, 2014).

Most of the school funding comes from municipal tax revenues, but part of the funding also comes from a federal subsidy to the municipalities. All pupils in upper-secondary school receive a monthly tuition fee. Since 2014, a student can also apply for a supplement to cover living expenses (e.g., lunch and transport to work). The Swedish government also finances these subsidies (Skolverket, 2014).

2.4 Postsecondary /Higher Education

The Ministry of Education and Research is responsible for the higher education system. Higher education is financed through state subsidies. Individual institutions receive funding based on the number of students and their performance, with different remuneration for the various educational sectors. Independent institutions that receive state grants cannot charge tuition fees (Eurydice, 2018e).

In Sweden, various Institutions offer higher education. Students can enrol in one of the 15 state universities (*universitet*) or in one of the 16 state university colleges (*högskolor*). To enrol at one of these institutions, a student is required to meet the requirements for admission and the specific qualifications required by the higher-education institution. Students must submit their applications for university programs to the Swedish University Council, which carries out the admission procedure for most universities. For admission to a university or university college

that does not have this agreement with the Swedish University Council, applications are sent directly to the university or university college (Amft Andrea, 2016) (Eurydice, 2018e).

To receive access to higher education, a student must have one of the following qualifications:

- An upper-secondary diploma obtained in upper-secondary education or in formal adult education.
- A vocational upper-secondary qualification, provided that specific preparatory courses for higher education are taken either as part of the curriculum or as complementary courses.

If a student meets the required qualifications, in some cases he or she still might not be given the chance to study. This can apply when a course has more applicants than places, as each institution can freely determine the number of study places for its courses. However, the government somehow determines how many places the various subjects shall have, as it somehow limits the places by limiting funding. Therefore, the following selection procedure applies if more students apply for a course than can be accommodated (Eurydice, 2018e).

- At least 1/3 of upper-secondary level students should be admitted, the sum of merit points from all courses passed during upper-secondary level.
- At least 1/3 should be admitted according to the results of the Swedish Scholastic Aptitude Test.
- A maximum of 1/3 should be admitted according to other criteria set by the local higher-education institution.

The majority of students in Sweden finance their studies with financial support from the state to cover their living costs. There are minimum performance requirements in terms of the number of credits obtained for further financial support. Student finance consists of a combination of study grants and student loans. In 2015, the grant share of student finance for an academic year of 40 weeks was SEK 28,280 and the loan limit was SEK 71,200. The maximum government-funded student loan for a single full-time student was SEK 99,480. Students can receive this financial support for a maximum of twelve semesters or six academic years. The repayment of the loan component is based on an annuity system. Normally, the total debt should be repaid in 25 years or before reaching the age of 60 (Amft Andrea, 2016).

2.5 Continuing Education (Adult Education)

Adult education in Sweden contains municipal adult education (*Komvux*), special education for adults (*Särvux*), Swedish for immigrants (*SFI*), higher vocational education and supplementary education courses. The aim of *Komvux* and *Särvux* is to offer adults the possibility to obtain upper-secondary certificates (MERS, 2013c).

Komvux, *Särvux* and *SFI* are tailored to the needs and requirements of the individual. The support of adult education can take the form of teaching, supervision, study guidance and evaluation of the achievement of objectives and the acquired knowledge, skills and competences. Each student receives an individual curriculum based on his or her skills and experience. The activities are characterised by taking into account the knowledge, skills and competences acquired by the adult to date. *Komvux* is designed in close cooperation with representatives of the infrastructure developed by the municipalities and with other actors and interest groups such as employers and representatives of other policy areas. Introductory courses can be organised locally at primary or upper-secondary level (MERS, 2013c).

2.6 Teacher Education

To become a pre-school teacher, a bachelor of arts in pre-school education is required, which takes three and a half years to complete. At the primary-school level, three different educational levels can apply. To become an extended pedagogue (extended pedagogues are leisure-time centre teachers) (Nyberg Britt, 2008), a bachelor in arts in primary-education-extended school is necessary; to become a pre-school class teacher, a master of arts in primary-education pre-school and school years one to three is required. Moreover, to become a fourth until sixth year teacher a master of arts in primary education school years four to six is essential. The first of these three programs lasts three years, while the other two last four years (University of Gotheburg, 2018).

At the secondary-education level, a seventh-until-ninth grade teacher is required to have obtained a master of arts or science, which lasts four and a half years. Moreover, at upper-secondary education, teachers need to have obtained the same education; but this takes a while longer, as it lasts five years (University of Gotheburg, 2018).

For teaching in vocational education and training, a higher-education diploma in vocational education is necessary. This education lasts one and a half years (University of Gotheburg, 2018).

Figure 7: The Swedish teacher-education system

Pre-School	Primary School			Secondary School		Vocational Education Teacher Training (VET)
Bachelor of Arts in Pre-school Education	Extended School pedagogue	Pre-school class – 3rd grade	4th – 6th grade	7th – 9th grade	Upper Secondary School 1st – 3rd grade	Higher Education Diploma in Vocational Education
	Bachelor of Arts in Primary Education-Extended School	Master of Arts in Primary Education – Pre-School and School Years 1-3	Master of Arts in Primary Education – School Years 4-6	Master of Arts/ Science in Secondary Education	Master of Arts/ Science in Upper Secondary Education	
3.5 years	3 years	4 years	4 years	4.5 years	5 years	1.5 years

Source: (University of Gotheburg, 2018)

3. The System of Vocational and Professional Education and Training

This section describes in more detail the system of vocational education and training (VET) at the upper-secondary level and the system of professional education and training (PET) at the tertiary level. The term *vocational and professional education and training* (or *VPET*) is used to refer to both the VET and the PET systems.

3.1 Vocational Education and Training (VET, Upper-secondary Level)

After finishing the compulsory education, which lasts nine years in Sweden, students have the choice to proceed to one of the 12 vocational programs or to one of the six general higher-education preparatory programs. The aim of vocational education is to prepare students for the labour market. As seen before under Section 2.3.2, the students can enrol into either a school-based (*skolfölgd utbildning*) or into an apprenticeship program (*lärlingsutbildning*). The main difference between these two programs is the proportion of work-based learning. Students enrolled in an apprenticeship program need a minimum of 50 percent work-based learning. Students enrolled in a school-based vocational program need only 15 weeks (nearly 15 percent of work-based learning). Diploma objectives, specialised curricula and orientations, admission requirements and diploma requirements are the same for both programs (Cedfop, 2016).

Generally, vocational programs are accessible to students aged 16 to 20 and last three years. Moreover, all of the 12 possible pathways can be seen in Figure 8. The programme structures and various courses are determined nationally, and, to obtain the diploma in each programme, the students need to obtain 2,500 credits, which are in accordance with the European Credit System for Vocational Education and Training (ECVET) points (Cedfop, 2016) (Skolverket, 2014).

The compulsory subjects at the upper-secondary level, the so-called basic subjects, are included in all programmes at the upper-secondary level, but differ in scope between vocational and university preparatory programmes. These subjects are English, history, sports and health, mathematics, natural sciences, religion, social sciences and Swedish or Swedish as a second language. Vocational and other subjects of a vocational-training program are defined nationally. However, schools may combine different courses in the specialisations of the programmes so that students can adapt their studies to a particular vocational outcome (Cedfop, 2016).

Figure 8: The 12 possible VET pathways

Programme	Orientations
The Child and Recreation Programme	Recreation and health / Pedagogical work / Social work
The Building and Construction Programme	Plant vehicles / House construction / Land and construction / Painting / Sheet metal
The Electricity and Energy Programme	Automation / Computers and ICT / Electrical technology / Energy technology
The Vehicle and Transport Programme	Goods handling / Bodywork and paint spraying / Lorries and mobile machinery / Passenger cars / Transport
The Business and Administration Programme	Administrative services / Commerce and service
The Handicraft Programme	Cabinetmaking / Floristry / Hairdressing / Textile design / Other handicrafts
The Hotel and Tourism Programme	Hotel and conference / Tourism and travel
The Industrial Technology Programme	Operations and maintenance / Process technology / Product and machine technology / Welding technology
The Natural Resource Use Programme	Animals / Agriculture / Forestry / Gardens
The Restaurant Management and Food Programme	Baking and patisserie / Fresh foods, delicatessen and catering / Kitchen and serving
The HVAC and Property Maintenance Programme	Property / Refrigeration and heat pump technology / Ventilation technology / HVAC
The Health and Social Care Programme	No national orientations

Source: (Cedfop, 2016)

To be admitted to a VET program, pupils must have studied Swedish or Swedish as a second language, English, mathematics and five other compulsory school subjects. After being admitted to study a vocational path at the end of the three-year program of education, students obtain a vocational diploma (*yrkesexamen*). To obtain the diploma, at least 2,250 credits out of the 2,500 possible credits must be obtained. Moreover, students must pass Swedish or Swedish as a second language, English, mathematics and diploma thesis. The diploma project enables students to demonstrate their ability to carry out recurrent tasks in the professional field. Teachers are responsible for evaluating and approving general and professional courses. However, the vocational school teacher is also responsible for passing the diploma thesis, but

a co-assessor with professional experience should also provide his input for the final evaluation. In addition, each subject at the upper-secondary level has a curriculum that has the same general structure. These curricula contain descriptions of the subject as a whole, its objectives and long-term objectives, and all of the courses in the subject and their descriptions. Core contents and knowledge requirements are defined for each course. In addition to what is specified in the curriculum, teachers choose methods, literature and materials to use in their teaching (Cedfop, 2016) (Skolverket, 2014).

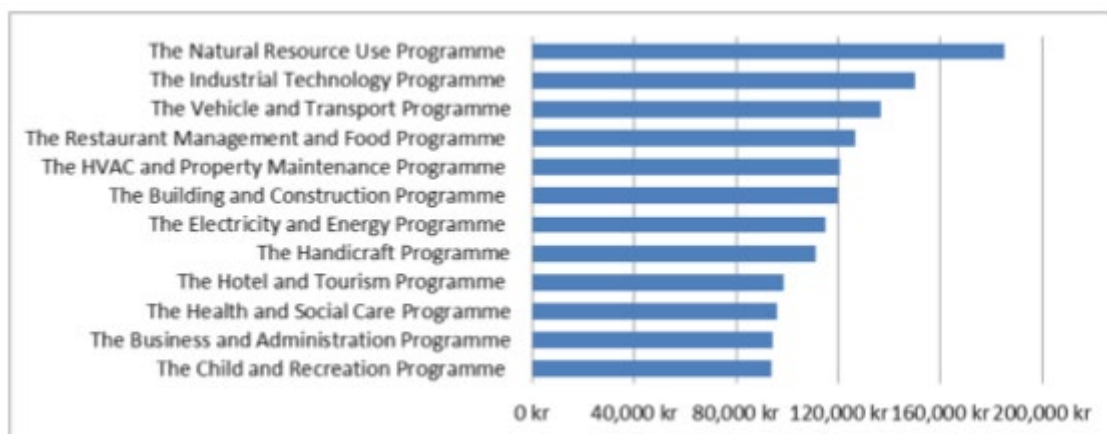
In 2016, 343,911 pupils attended upper-secondary education, 283,723 of them in a national programme (excluding introductory programmes) and 94,232 in vocational training. In recent years, the number of trainees has risen to 9,398, which is 10 percent of all VET students (Cedfop, 2016). However, only 37 percent of all students in upper-secondary education (e.g., upper secondary and adult education) in Sweden were enrolled in VET, which is one of the lowest shares among OECD countries. At the upper-secondary level, a small proportion of pupils are enrolled in vocational training in apprenticeship training (e.g., in combined school and work-related programs). Despite the low proportion of students enrolled in VET, expenditure per student on upper secondary VET is around USD 16,873, the second highest amount after Luxembourg (OECD, 2018e).

Most of the school funding comes from public tax revenues, but part of the funding comes from a general government grant to the municipalities. This is supplemented by targeted subsidies from the central government for special initiatives. The basic model for financing upper-secondary school consists of a school supplement per pupil, which is made irrespective of whether the pupil attends a municipal school or an independent school. For apprentices, the vocational training organiser can apply for an additional state subsidy per trainee per year, of which 83 percent is reserved for the employer hosting the apprentice. In addition, the workplace may receive a surplus if the supervisor has participated in a training programme approved by the National Agency for Education (Skolverket, 2014).

All upper-secondary school pupils receive a monthly tuition fee. Since 2014, a student can also apply for a supplement to cover living expenses, e.g., transport to work and lunch. The Swedish government also finances these subsidies. As of July of 2014, pupils attending apprenticeship training at the upper-secondary level can be employed in what is known as apprenticeship training at the upper-secondary level. This means that apprentices at the upper-secondary level can already be offered employment during their training in accordance with adapted labour regulations (Skolverket, 2014).

Figure 9 shows the average cost of the different VET programs in Sweden in Swedish crowns (SEK). As mentioned before, most of the funding comes out of tax revenues and government funding.

Figure 9: Average costs per upper secondary VET program in 2016

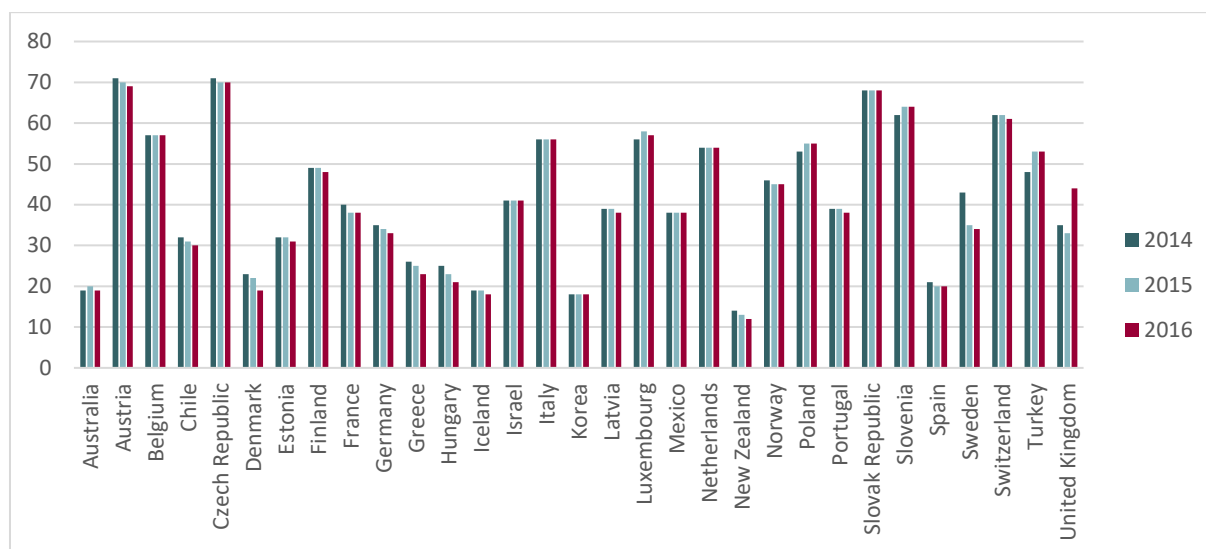


Source: (Cedfop, 2016)

As seen before, the Swedish National Agency of Education and the Swedish government inherit major roles in the vocational education and training in Sweden. Therefore, after the 2011 reform, the Education Act and the Upper Secondary Ordinance introduced regulations on the management of apprenticeship training, which are being drawn up by the Swedish government and the Swedish National Agency for Education (Skolverket, 2014).

Each vocational-training program has an associated national programme council. The national program councils are advisory bodies made up of six to ten representatives from industry, employers and employees organisations and some public authorities. Their task is to support the Swedish National Agency for Education on issues such as the content of vocational-training programs and labour-market requirements. Moreover, the vocational schools are responsible to find a workplace wherein the student can obtain his or her vocational training (Skolverket, 2014).

Figure 10: Share of students (15-19 years) enrolled in upper secondary vocational education (2014 – 2016)



Source: (OECD, 2018g)

Figure 10 shows the enrolment of students aged 15 to 19 in upper-secondary vocational education for most of the OECD countries. As can be seen in the figure, Austria, the Czech Republic, the Slovak Republic, Slovenia and Switzerland are the five countries with the highest enrolment rates in upper-secondary vocational education. Also evident is the fact that, in most of the countries, the enrolment rates shrunk or remained stable from 2014 to 2016.

The enrolment rate in Sweden amounted in 2014 to 43 percent and shrunk to 35 percent in 2015. In 2016, the enrolment rate shrunk marginally by one point to 34 percent. Despite the fall in enrolment rates, Sweden has still higher enrolment rates than Germany, but the country is outperformed by its neighbours Finland and Norway, where the enrolment rate remained nearly stable and amounted to 48 percent in Finland and to 45 percent in Norway in 2016.

3.2 Professional Education and Training (PET, Post-secondary Level)

In Sweden, professional education and training is called higher vocational education (HVE). It is a post-secondary form of education, which aims to further improve the skills of the students and cover the needs of the labour market. Nationwide, hundreds of programs are available in 16 areas: economy, administration, data analysis and IT, journalism, law, health care and many others. Most of the available programs are in the areas of economy and administration. Therefore, most of the accessible programs are in the field of business finance and administration (Yrkeshögskolan, 2018) (MYH, 2019a).

Higher vocational education is provided in cooperation with training providers and the employers and sectors concerned with the programme. All programs therefore have a strong focus on workplace training; each program involves at least 25 percent of workplace training.

Company training gives students the opportunity to gain insight into their chosen professions during their studies and offers them the opportunity to combine theory and practice. At the same time, the employer has the opportunity to get to know a potential future employee. In addition, on-the-job training offers as well excellent opportunities to establish a network of contacts with potential employers (Yrkeshögskolan, 2018).

Employers and industry representatives play an important role in the planning of a higher vocational program and influence its content. Employers and industry contribute to and influence the content of the program by participating as lecturers, participating in projects, welcoming study visits and offering internships. In higher education, education must also contribute to the development of pupils' competences in the field of entrepreneurship. Higher vocational education may also take the form of distance learning. In the learning centres (*lärcentra*) run by municipalities, trade unions, adult-education centres and other organisations, students have access to counselling, premises and technical facilities; they benefit from Internet access, video conferences, copies and examination facilities. After the students have successfully finished their higher vocational program, they are ready to enter directly the labour market (Cedfop, 2016) (Yrkeshögskolan, 2018).

All the programs have their own duration. Therefore, the various programs can have a length of at least six months and up to two years. However, most of the programs are between one to two years long. The one-year program corresponds to 200 HVE-credits (YH-poäng). Once the students have successfully absolved their HVE-program, they obtain either the higher-vocational-education diploma, called *yrkeshögskoleexamen* or the advanced-higher-vocational education diploma, called *kvalificerad yrkeshögskoleexamen* (Yrkeshögskolan, 2018).

Graduates will receive a higher-vocational-education diploma (*yrkeshögskoleexamen*) who have obtained at least the lowest possible passing grades, knowledge, skills and competences in all courses of the programme and have obtained at least 200 credits in higher vocational education. Graduates receive a higher-education diploma (*kvalificerad yrkeshögskoleexamen*) who have received at least the lowest possible passing grade, knowledge, skills and competences in all courses included in the program and have collected at least 400 credits in vocational education and training and completed a diploma project. Moreover, each program must include at least 25 percent of internship (Cedfop, 2016).

Another involved actor in the PET system of Sweden is the Swedish National Agency for Higher Vocational Education and Training (MYh). The Swedish National Agency for HVE has regulatory oversight over the programs. Moreover, a special law and ordinance regulates the activities of the Swedish National Agency for HVE and the providers of HVE. In addition, existing ordinances regulate both provider obligations and programming. The Swedish

National Agency for HVE examines and audits the quality of the programs and deals with feedback and complaints from students (Yrkeshögskolan, 2018).

To be eligible to study in an HVE-programme, students must have graduated from upper-secondary education. In addition, each institution may ask for specific criteria, such as having attended specific courses at the upper-secondary level or acquired specific working experience prior to enrolment in a HVE programme. However, the de facto enforcement of the rules are generous, and applicants from different backgrounds are given the opportunity to prove that they meet the admission requirements (Yrkeshögskolan, 2018).

General admission requirements for HVE are fulfilled if the student:

1. has received a school-leaving certificate from a full national upper-secondary school program or has received a school leaving certificate from adult education at the upper-secondary level,
2. holds Swedish or foreign qualifications equivalent to the requirements stated under 1,
3. is a resident of Denmark, Finland, Iceland or Norway and there meets the entry requirements for study programs equivalent to the Swedish HVE programs, or
4. holds Swedish or foreign qualifications, or has, through practical experience or other circumstances, complied with the program requirements.

In a situation in which there are more applicants for an HVE program than there are study places available, a selection has to be made among the applicants. The selection procedures vary among the various HVE programs; therefore, the student wishing to enrol in an HVE program may be asked to take on a written test or go through an interview. Furthermore, the grades of the applicant's previous education and work experience may also be taken into account. This means that each education provider has its own admission procedure in its programs (Yrkeshögskolan, 2018).

In 2015, 46,400 students were enrolled either in a higher-vocational-education program or in an advanced-higher-vocational-education program. Compared to 2014, this means an increase of four percent. Most of the students enrolled in a VPET program are found in information and communication technology, finance, administration and sales, healthcare, construction, technology and manufacturing (Cedfop, 2016).

In 2017, 1,812.1 million SEK were spent on the PET system by the state. This means that a PET study costs an average of 63,800 SEK (SNAHVE, 2017).

3.3 Regulatory and Institutional Framework of the VPET System

3.3.1 Central Elements of VPET Legislation

The national school system is regulated by the Education Act (*Skollag*, 2010:800) passed by Parliament (*riksdagen*). The Education Act contains general regulations for all types of schools and therefore also for vocational education and training. The national curriculum adopted by the government defines the tasks and overall objectives of upper-secondary education and upper-secondary-vocational education and the values that should form the basis of education. Parliament decides on upper-secondary education and so on which topics should be core topics. The government defines the objectives of the program and the purpose and objectives of each national program. The National Agency for Education (*Skolverket*) adopts curricula. The curricula define the objectives of the teaching for each subject and each course (Eurydice, 2018c).

The general objectives and guidelines are laid down in the curriculum for the upper-secondary school (*Läroplan för gymnasieskola* 2011), which applies to the upper-secondary school (*gymnasieskolan*) (Eurydice, 2018c).

The higher-vocational-education programs (*yrkeshögskoleutbildning*) are developed and implemented in close cooperation with employers and industry. The educational programs prepare students for occupations that may be associated with a particular occupation and which have been developed to meet the high competence requirements of these sectors. The programs include practical activities and problem solving, and all programs have a strong focus on internships (*lärande i arbete*, *LIA*). As the programs are tailored to a changing market situation, the range of programs and specialisations will change over time. New programs will be launched and old programs will be discontinued or updated as the labour market changes. Occupations can be in manufacturing, administration, healthcare or media (Eurydice, 2018c).

Higher vocational training corresponds to a need for qualified labour on the labour market which is not covered by education under the Higher Education Act (*Högskolelag*, SFS 1992:1434). It also contributes to the development or maintenance of qualified vocational skills in a narrow occupation that is important for individuals and society (examples may be different types of crafts for which the employer's demand may not be so high) (Eurydice, 2018c).

Several laws and regulations govern higher education. The Higher Education Act (*Lag om yrkeshögskolan*, SFS 2009:128) and the Higher Education Ordinance (*Förordning om yrkeshögskolan*, SFS 2009:130) are the most important regulations in the field of education (Eurydice, 2018c).

Educational providers within higher education may be institutions or bodies such as universities, local authorities or private training companies. The general objectives and guidelines of each PET programme are set out in the training plan (*utbildningsplan*), which is governed by the Higher Education Ordinance (*Förordning om yrkeshögskolan*, SFS 2009:130). The educational plan is a general document describing the objectives, main content, admission requirements, selection process, scope of training, educational provider and quality control (Eurydice, 2018c).

3.3.2 Key Actors

a) Vocational Education and Training

Government

In Sweden, the parliament and the government have the highest responsibility for the education system. The vocational education and training system is governed and regulated by the Ministry of Education (*utbildningsdepartementet*). Moreover, municipalities, national program councils and the state support the ministry as these are the public providers of vocational training (Unesco, 2013).

The National Agency for Education (NAE) (*Skolverket*)

The NAE develops and determines the educational content of the VET program and the requirements for completion. The NAE prepares and chairs the meetings of the national program councils. These meetings take place approximately six times a year. The NAE must also analyse and propose measures at the national level to support regional and local actors in the implementation of the European Credit System for Vocational Education and Training (ECVET) at all levels of vocational education and training (Unesco, 2013).

The National Program Councils (*nationella programråd*)

They are advisory bodies and a permanent forum for dialogue between the NAE and stakeholders regarding the quality, content and organisation of vocational education and training. Each vocational-training program offered in upper-secondary schools has a national program council which advises and supports the NAE in its tasks. The councils also carry out other tasks, such as collecting data on students' entry into the labour market and improving cooperation between schools and business. The councils are composed of representatives from industry, employee organisations and public authorities (Unesco, 2013).

The Swedish School Inspectorate (*Skolinspektionen*)

Skolinspektionen is responsible for the supervision and quality control of vocational upper-secondary education. The regular supervision and quality audit of the schools is based on a

number of assessment areas and points. Vocational training is at the heart of both regular supervision and quality testing (Cedfop, 2016).

Representation and advisory bodies

The Swedish National Agency of Education and the Swedish government inherit major roles in vocational education and training in Sweden. Therefore, after the 2011 reform, the Education Act and the Upper Secondary Ordinance introduced regulations of the management of apprenticeship training; these are now being drawn up by the Swedish government and the Swedish National Agency for Education (Skolverket, 2014).

Each vocational-training programme has an associated national programme council. The national programme councils are advisory bodies made up of six to ten representatives from industry, employers and employee organisations and some public authorities. Their task is to support the Swedish National Agency for Education on issues such as the content of vocational-training programmes and labour-market requirements. Moreover, the vocational schools are responsible to find a workplace for the student to obtain his vocational training (Skolverket, 2014).

Education and training providers

Vocational and general upper-secondary education is provided within the same facilities operated by municipalities, counties or independent organisers in subsidised independent schools (*fristående skola*) (Eurydice, 2018c).

b) Professional Education and Training

Government

The Swedish National Agency for Higher Vocational Education and Training (MYh)
(*Myndigheten för yrkeshögskolan*)

The MYh is responsible for higher vocational education and training (HVE) in Sweden and has a clear mandate to fulfil:

- HVE programs, which are geared to the actual need for qualified workers in working life and
- the development and maintenance of professional expertise in specific, hardly defined work-related fields.

The agency collects and analyses information on the skills needed by the labour market in different sectors and regions. The MYh uses this information as a basis for assessing which programs have to be included in the HVE, taking into account the criteria relevant to the labour market. Therefore, the MYh carries out functions such as evaluations and inspections and monitors student entrances into the labour market. Moreover, the MYh produces statistics on

the proportion of students in the world of work. MYh ensures the accuracy of the programs by checking, for example, whether students occupy positions in the field in which they have studied (Unesco, 2013).

The Labour Market Council (*arbetsmarknadsråd*)

The Labour Market Council is a special institution linked to MYh. The council provides information on the labour market: e.g., what professional specialisations are required, what qualifications need to be introduced or expired. The council is chaired by the head of the MYh, and its members are representatives of the Labour Market Service (*Arbetsförmedlingen*) and the social partners (Unesco, 2013).

Representation and advisory bodies

In the area of professional education and training, social partners such as employers and industry representatives play an important role and participate in different contexts of higher vocational education in Sweden (MERS, 2013b).

At each HVE program, the social partners play a leading role throughout the program. Moreover, the social partners comprise an important partner to the Swedish National Agency for Higher Vocational Education and Training (MYh), as they provide the agency with necessary information so that the agency knows the needs of the labour market. To uphold the exchange between the agency and the social partners, the MYH has established various networks in different sectors in which the social partners and the agency are represented (MERS, 2013b).

Furthermore, the MYh, as mentioned, also has a council (*arbetsmarknadsråd*) which advises the agency on the need for programs and future skills. This council consists of social partners such as the Swedish Association of Local Authorities and Regions, employee and employer organizations such as TCO (Swedish Confederation of Professional Employees), LO (Swedish Trade Union Confederation), the Swedish Association of Entrepreneurs, the Swedish Association of Enterprises and the Swedish Labour Market Service (MERS, 2013b).

Education and training providers

Higher-education-training providers may be institutions or bodies such as universities, local authorities or private training providers. Training providers must have the competences and conditions necessary to organise training in the field to which the education program relates. Training providers may implement the program in cooperation with others. Industry professionals recruited by the training provider for teaching or supervision shall have the

competence they have acquired through training or experience for the professional education area they carry out (Eurydice, 2018e).

The government usually has the power to regulate activities and administrative matters within post-secondary vocational training (Eurydice, 2018e).

3.4 Educational Finance of the VPET System

As seen before, the municipalities, country councils and the state are responsible for education and therefore also for the funding. The municipalities finance and offer all secondary school programs. They also finance the entire upper-secondary level for adults, but generally pass on education to public or private providers in an education market. The regions offer some programs for upper-secondary education, mainly in the field of natural resources, but the municipalities provide funding. The state finances higher-vocational education through the Swedish Agency for Higher Vocational Education, but it does not provide vocational education. The state provides state subsidies to most municipalities and individual public or private schools to ensure equity and equality in education (Cedfop, 2016).

The tax revenues of the municipalities and the government ensure the financing of the public-school system. The independent upper-secondary schools are also financed entirely from public funds. Most of the school funding comes from municipal tax revenues, but some comes from general subsidies from the government to municipalities. All municipalities are guaranteed equal financial conditions according to a special equalisation system. The government grant is therefore based on a number of different parameters such as population, population structure, social structure and number of immigrants. Each municipality determines how it will allocate resources, as this general government grant is not earmarked and is complemented by targeted government grants for specific initiatives such as apprenticeship training, adult vocational training and projects to develop the quality of work-related learning. The cost per pupil may therefore vary between schools and communities. The Swedish National Education Agency had to provide a total of SEK 482 million for 2018 to cover the subsidies (Cedfop, 2016) (Skolverket, 2019).

The higher-vocational-education programmes are financed partly by public funds and partly by employers. 2012 was the first year in which the Swedish National Agency for Higher Vocational Education and Training asked education providers for a preliminary budget estimate in which this partial financing was presented. The agency receives an annual grant from the government, which is then passed on to training providers (MERS, 2013b). In 2017, 1,812.1 million SEK were spent on the PET system by the state. This means that a PET study place on average costs 63,800 SEK (SNAHVE, 2017).

3.4.1 Educational finance of the VET system

Most of the school financing comes from municipal tax revenues, but part of the financing also comes from a federal support to the municipalities. This is supplemented by targeted subsidies from the central government for special initiatives. The basic model for financing the upper-secondary level consists of a school allowance per pupil, which is given irrespective of whether the pupil attends a municipal school or an independent school. For trainees, the vocational training organiser can apply for an additional state subsidy per trainee per year, of which 83 percent is intended for the employer who educates the trainee. In addition, the workplace may receive a surplus if the supervisor at the company has participated in a training program approved by the National Agency for Education (Skolverket, 2014).

All upper-secondary school pupils receive a monthly tuition fee. Since 2014, an apprentice can also apply for a supplement to cover living expenses, e.g., transport to work and lunch. The Swedish government also finances these subsidies. The school can be used in a so-called upper-secondary apprenticeship. This means that apprentices at the upper-secondary level can already be offered employment during their training in accordance with adapted labour regulations (Skolverket, 2014).

The Swedish National Education Agency had to provide a total of SEK 482 million for the year 2018 to cover the subsidies (Skolverket, 2019).

The grant consists of four parts:

- Contributions to the development costs. A maximum of SEK 2,500 per pupil per semester will be charged to the school principal for the development of the education.
- Contributions to employers. A maximum of SEK 16,250 per pupil per semester will be paid to the employer.
- Contributions for trained supervisors. A maximum of SEK 5,000 per pupil per semester is paid to the employer.
- Contributions to upper-secondary education. A maximum of SEK 2,500 per pupil per semester is paid to the employer. Students therefore must have a teaching contract for the upper-secondary level according to the *lagen om gymnasial lärlingsanställning* (Secondary School Teaching Act) (2014:421).

The 2016 budget earmarked SEK 67 million to strengthen the quality and attractiveness of vocational education and training at upper-secondary level. The investment was intended to support vocational guidance and to further strengthen cooperation among schools and employers (European Commission, 2016).

3.4.2 Educational finance of the PET system

The HVE programs are financed mainly by public funds and partly by employers. 2012 was the first year in which the Swedish National Agency for Higher Vocational Education and Training asked education providers for a preliminary budget estimate in which this partial financing was presented. The agency receives an annual grant from the government, which is then passed on to training providers. A condition for receiving a share is that the school has an education program or has recently started one. In addition, publicly funded higher-education programs may not charge students tuition fees (MERS, 2013b).

Partial financing by the employer can take the form of tutoring during the internship, providing teaching materials for certain modules, sponsoring the purchase of machines, equipment, etc. There is a small number of additional training courses, especially in the fields of arts, crafts and culture. Some of the courses are financed with state subsidies (MERS, 2013b).

Higher education is almost exclusively publicly funded. The government annually awards public-service agreements which set out the obligations of higher-education institutions. The financing of courses and study programs depends on the number of students and the annual performance equivalent, and the amount of funding also varies according to subject area. In addition, funding is limited upwards (MERS, 2013b).

There are no tuition fees for Swedish citizens or for citizens of EU/EEA countries and Switzerland. State universities can only charge money for education in two cases: Tuition fees for students from countries other than those mentioned and contract formation. Contract training refers to training paid for by a client and passed on to persons selected by the client. No fee may be charged to these persons. Universities are free to set fees or prices so long as the costs for the university are fully covered (MERS, 2013b).

Universities and colleges receive government funding directly from the government, while the Swedish National Agency for Higher Education receives an annual government grant, which is awarded to education providers with ongoing programs or who launch new programs. Other sources of co-financing of HVE are adopted. The social partners provide such co-financing (MERS, 2013b).

In 2017, 1,812.1 million SEK was spent on the PET system by the state. This means that a PET study on average costs 63,800 SEK (SNAHVE, 2017). As mentioned above, and as can be seen in Figure 11, government spending can vary by educational area and number of students. Therefore, the educational area of finance, administration and sales receives the highest amount at 396.3 million SEK. In contrast, environmental protection only receives 1.3 million SEK. As seen before, this is mostly due to the interest in the educational field. Most of the available programs are in the areas of economy and administration. Hence, the largest

numbers of accessible programs are in the field of business finance and administration, which justifies the fact that this educational field receives more funds than others (Yrkeshögskolan, 2018).

In comparison, the total cost of preschools, leisure centres, other educational activities, schools and adult education in 2017 was SEK 276.3 billion. Compared to 2016, the costs rose by almost SEK 11.2 billion, an increase of 4.2 percent. Of all school types, primary school has the highest cost and pre-school the second highest. In 2017, compulsory education cost SEK 114.7 billion and preschool almost SEK 75 billion. This indicates that, despite the large amount spent on professional education and training, it is only marginal in comparison to the total spending in education (Skolverket, 2017).

Figure 11: Government spending by educational area, in mio. SEK (2012 – 2017)

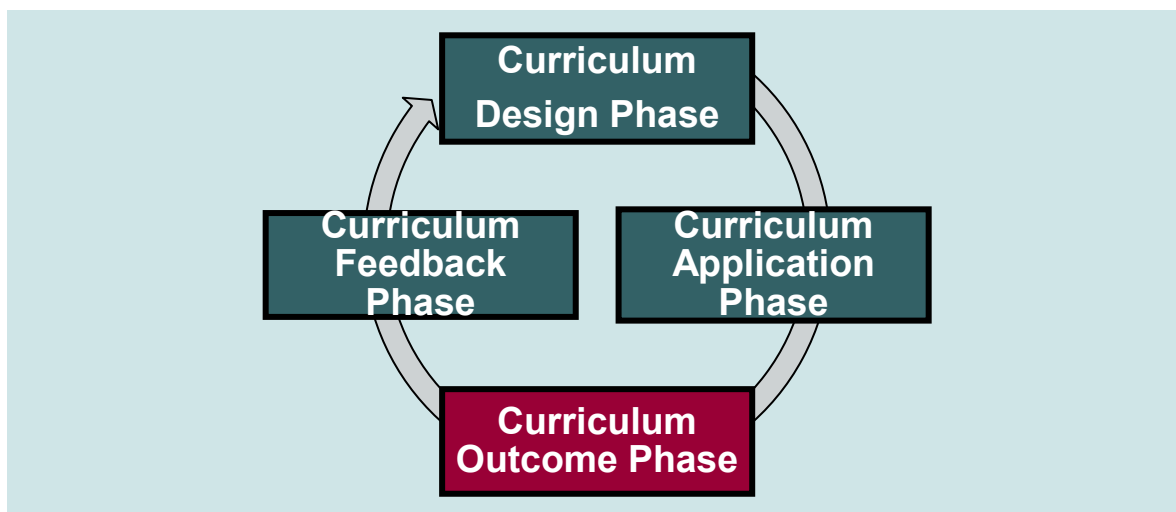
Educational area	2012	2013	2014	2015	2016	2017
Computer/ IT	131.7	163.9	182.1	221.4	241.8	227.5
Finance, Administration and Sales	332.1	371.9	387.1	385.7	369.1	396.3
Health and Body care	12.8	14.1	15.2	14.6	13.6	9.8
Hotel, Restaurant and Tourism	76.3	78.8	81.7	81.6	78.3	79.4
Health care and Social work	120.6	131	147.1	173.2	175.8	193.1
Journalism and Information	6.5	9.4	17.3	19.4	18.4	25.8
Legal	6.3	9	8.9	9.8	11.2	13.2
Culture, Media and Design	66.9	71	86.5	103.1	99	96.6
Agriculture, Animal care, Garden, Forest, Fishing	51.8	55	49	55.7	64.3	67.3
Environmental protection	1.1	1.3	0.5	0.5	1.2	1.3
Education and Teaching	17.6	18	20.9	19.9	22.9	28.5
Civil engineering and Construction engineering	142.3	180.6	186.8	200.1	224.8	247.2
Safety and Security	10.3	9.4	9.5	10	12.5	8.6
Technology and Manufacturing	239.8	270.5	279.1	289.9	284.7	289.1
Transport	56.8	59.4	55.6	84	111.9	114.1
Other	7.8	13.1	13.9	10.4	10.8	14.6
Total	1'280.40	1'456.30	1'541.00	1'679.40	1'740.20	1'812.10

Source: (MYH, 2019a)

3.5 Curriculum Development

By defining the framework and the (quality) standards for the education system, the curriculum is a central element for the functioning of a VPET system. The development of a curriculum can be decomposed into a three-step process of curriculum design, curriculum application and curriculum feedback. This theoretical concept is called the curriculum value chain and is depicted in the picture below (CVC; for more details see (Bolli, et al., 2016)).

Figure 12: Curriculum Value Chain (CVC)



Source: (Bolli, et al., 2016)

In the curriculum-design phase, VET curriculum content and qualification standards are decided upon by the relevant actors. Therefore, the discussion in the subchapter below focuses on the degree and the amount of stakeholder participation concerning curriculum design in Sweden. The curriculum-application phase revolves around the implementation of the curriculum. Because learning environments differ heavily across countries—especially with respect to the prevalence of workplace learning—the subchapter on the curriculum-application phase in this Factbook focuses on those learning environments. Specifically, it addresses where learning takes place and whether the curriculum dictates both school and workplace learning or only one of the two. Finally, curriculum outcomes can be collected and analysed in the curriculum-feedback phase. This evaluation process is important, as it may render a more refined curriculum design than was possible in the first place.

3.5.1 Curriculum Design Phase

The design phase is crucial for the whole curriculum process. To ensure that the skills taught in the VPET programmes correspond to the needs of the labour market, experts from companies should be involved in defining the qualification standards and learning contents of the curricula.

Apprenticeship programs

Students can enrol in either a school-based program (*skolfölagd utbildning*) or an apprenticeship program (*lärlingsutbildning*). The main difference between these two programs is the proportion of work-based learning. Though the students enrolled in an apprenticeship education need a minimum of 50 percent of work-based learning, the students of a school-based vocational education only need 15 weeks (nearly 15%) of work-based learning. Diploma

objectives, specialised curricula and orientations, admission requirements and diploma requirements are the same for both programs (Cedfop, 2016).

The Swedish government and the Swedish National Agency for Education (*Skolverket*) draw up the administrative documents in the form of curricula, diploma objectives and curricula (Cedfop, 2016). The schools are responsible for job search and for deciding on the organisation, planning and follow-up of apprenticeship training. Therefore, apprenticeship training can be organised in different ways, as mentioned under 2.3.2 (Skolverket, 2014).

Each VET program has a national programme council assigned to it. The national programme councils are consultative bodies composed of six to 10 representatives from industry, employers' and workers' organisations and some public authorities, all of which have the task of supporting the Swedish National Agency for Education on issues such as the content of VET programs and labour-market requirements (Skolverket, 2014).

According to the rules, schools offering vocational education and training should establish one or more local program councils for cooperation between school and working life. The tasks are not regulated, but they may include, for example, assisting the head teacher in providing jobs, planning and organising learning in the workplace and participating in the systematic quality assurance of apprenticeship training (Skolverket, 2014).

In several areas, the social partners work together through professional associations to ensure the quality of vocational education and training and to ensure that educational content meets the requirements of the labour market (Skolverket, 2014).

Higher Vocational Education (HVE)

The Swedish National Agency for Higher Vocational Education and Training (*Myndigheten för yrkeshögskolan* or *MYH*) is responsible for all higher-vocational-education (HVE) matters all over the country. The main task as a central authority is to evaluate the demand for skilled labour on the labour market and decide which programs should be offered within higher vocational education (MERS, 2013b).

The qualification requirements of employers and industry determine which programs are chosen, where in Sweden they are offered and how many places are allocated to each program. The evaluation process weights compilations of information from different sources. An important source of information is the application of the educational institution for the launch of an HVE program. The application must contain an objective description of the demand from employers and the specific qualification to which the program leads, including an explanation of why there is a particular need for this program. In addition, the application must include information on how the targeted employers and sectors will support the program and contribute to its development and quality assurance (MERS, 2013b).

In accordance with the law and the ordinance, and within the framework of the funding allocations for HVE programs, the HVE decides independently which degree programs are to be included in higher education and how the various degree programs are to be structured. However, external-interest groups such as employers and industry associations and central and regional authorities play an important role in providing the information and materials needed for the assessment and decision-making processes (MERS, 2013b).

The central and regional authorities are the Swedish Labour Market Service, Statistics Sweden, the Swedish National Agency for Education, the Swedish National Agency for Higher Education and the Swedish Agency for Economic and Regional Growth. Examples of employers and industry associations are the Swedish Association of Local Authorities and Regions; employee and employer organisations such as TCO, LO, the Swedish Federation of Business Owners; and the Swedish Business Federation and the Swedish Labour Market Service (MERS, 2013b).

3.5.2 Curriculum-application phase

The way in which a curriculum is implemented—especially with respect to learning environments—is important to achieving the intended learning outcome. As described in Section 3.1, apprenticeship programs contain a school-based and work-based component at the upper-secondary level. In addition, the vocational part of the program absorbs half or less of the program time, as the students, depending on the path, enjoy only 15 or 50 percent workplace training. Moreover, the PET programs also contain school- and work-based components, as the students of each program enjoy at least 25 percent of workplace training; therefore, the PET programs are similar to the VET programs (Cedfop, 2016) (MERS, 2013b).

3.5.3 Curriculum-feedback phase

The curriculum-feedback phase has to do with whether and how educational outcomes are analysed. Based on the feedback provided in this phase, the curriculum could be re-worked and improved.

The Swedish School Inspectorate (*Skolinspektionen*) is responsible for the supervision and quality control of vocational upper-secondary education. The regular supervision and quality audit of the schools is based on a number of assessment areas and points. Vocational training is at the heart of both regular supervision and quality testing. Structured cooperation between training providers and the workplace has proven to be an important success factor for learning in VET. Although training providers are responsible for carrying out systematic quality control, the government supports and promotes the development of quality in VET through various initiatives and specific support programs. This may include specific tasks delegated to the Swedish National Agency: e.g., the development of guidelines for work-based learning. In

addition, the government has adopted a comprehensive support program consisting of grants to schools to maintain and develop the quality of work-related learning (Cedfop, 2016).

The Swedish National Agency for Higher Vocational Education and Training (*Myndigheten för yrkeshögskolan (MYh)*) is responsible for carrying out inspections and quality assurance in higher vocational education to ensure that programs comply with the law and regulations (MERS, 2013b).

The purpose of inspection and quality control is to ensure that the regulations are complied with and that the program delivers the expected result. Higher education courses that do not meet government requirements will be adapted or discontinued. Inspection and quality assurance also contribute to the continuous improvement of the higher-vocational-education and training programs. An integral part of supervision is to identify areas where there is a need for development and then to provide guidance by describing shortcomings and areas for improvement in each program and thus improving them (MERS, 2013b).

The Swedish National Agency for Higher Vocational Education and Training uses six different quality criteria in its supervisory and quality-assurance work. The criteria should cover all quality areas (results, relative value and legislation) (MERS, 2013b):

1. professional role and program concept,
2. relevance for the labour market,
3. social partnership,
4. control and administration,
5. teaching methods, and
6. systematic quality assurance.

3.6 Supplying Personnel for the VPET System (Teacher Education)

Teachers in vocational education at the upper-secondary level require a university degree in vocational education (*yrkeslärarexamen*); they can acquire this by studying for 1.5 years in a vocational-education course at a higher-education institution or university. Vocational education covers the core of educational methodology—namely, general educational knowledge and skills and practical supervised training at a school (Cedfop, 2016) (Unesco, 2013).

Interestingly, there are no formal requirements for teachers of higher vocational education and training. However, teachers must have good or very good knowledge and experience in their fields. The Act on Higher Education § 12 lays down the requirements (Cedfop, 2016) (MERS, 2013b) (MYH, 2016):

The persons entrusted by the educational provider with teaching or supervision must have acquired the necessary skills for the training they are to provide through training or experience.

Many teachers are engaged directly out of the economy. The educational institution is responsible to provide teachers with the support they need to teach in their specific educational areas (Cedfop, 2016) (MERS, 2013b) (MYH, 2016).

4. Major Reforms in the Past and Challenges for the Future

4.1 Major reforms

In 2011, the Education Act (2010:800) was reformed and supported by the Upper Secondary Ordinance (2010:2039). These acts introduced regulations for the control of apprenticeship training, which are drawn up by the Swedish government and the Swedish National Agency for Education. Moreover, the Education Act is intended to allow all students to achieve their objectives and complete upper-secondary education with improved skills both for the labour market and for further study (OECD, 2017c) (Skolverket, 2014) (Eurydice, 2018d).

The Ministry of Education and Research put forward a proposal in 2017 for a recommendation to expand vocational training programs to ensure that students can complete basic qualification courses at university without shortening the time required for vocational training. The proposal provides for a prolongation of teaching time so that students have the opportunity to attend courses that impart vocational skills and, at the same time, qualify for higher education. The government proposes investing SEK 234 million per year in the development of vocational education and training from 2022 onwards (Eurydice, 2019).

Moreover, in the budget draft for 2018, the government planned increased investment in higher education (*Yrkeshögskolan*). The intended investment could increase the number of students by almost 45 percent by 2022. The full expansion amounts to SEK 920 million, which corresponds to 14,000 additional students in 2022 (Eurydice, 2019).

In 2018, an extension of higher vocational education was launched with more educational institutions and many new educational programmes. Among the 525 new programmes presented, there were also eight completely new professional positions that were previously not available in the PET system: electric car specialist, specialist for sustainability, programmer for self-driving automobiles (software developer) or social administrator (MYH, 2019b).

4.2 Major challenges

A major challenge is to increase the learning environment and teaching practices so that teachers feel more comfortable within their professions and so that the best qualified will remain in the teaching profession. Furthermore, it is essential to improve outcomes for migrant students and to continue to work towards fast integration. Moreover, a national framework is required for the evaluation of schools and teachers for guaranteeing the equivalence of evaluation results between schools (OECD, 2017c).

A growing population, a strong increase in the number of newly arrived migrants under 20 and a shortage of teachers in general and vocational education and training are challenges the Swedish education system will have to face in coming years. In addition, the availability of

vocational training is largely influenced by students' personal preferences. Under the Education Act, municipalities must, so far as possible, offer places in educational areas which are in accord with the wishes of the students. The difficulty in planning and defining the scope of vocational education and training is that such training and education is oriented towards the students who choose their own course rather than toward a course that is intended to cover the needs of different sectors of the economy. Guidance, information and various incentives are therefore the means by which pupils can be attracted to specific vocational-training programs (Cedfop, 2016).

Moreover, a shortage of teachers is expected in the future. Statistics Sweden's forecast of labour supply and demand up to 2035 predicts an increase in demand for teachers. The rising student numbers, as seen under 4.1, explain the increase. The shortage of qualified teachers is likely to be highest among vocational school teachers. It is expected that the request for qualified teachers will surpass the offer by more than 30 percent by 2035 (Skolinspektionen, 2015) (Skolverket, 2015) (Statistics Sweden, 2019) (Cedfop, 2016).

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